Exor International

Industrial Computing Solutions Industrial Panel PC eTOP-IPC1560T/1960T Series

User Manual

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www.exorint.net

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Preface

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Acknowledgements

eTOP-IPC1560T/1960T is a trademark of EXOR International S.p.A.. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

This section provides the FCC compliance statement for Class B devices and describes how to keep the system CE compliant.

Declaration of Conformity

CE

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

RoHS Compliance

EXOR INTERNATIONAL RoHS Environmental Policy and Status Update

EXOR INTERNATIONAL is a global citizen for building the digital infrastructure. We are committed to providing green products and services, which are compliant with European Union RoHS (Restriction on Use of Hazardous Substance in Electronic Equipment) directive 2011/65/EU, to be your trusted green partner and to protect our environment.

RoHS restricts the use of Lead (Pb) < 0.1% or 1,000ppm, Mercury (Hg) < 0.1% or 1,000ppm, Cadmium (Cd) < 0.01% or 100ppm, Hexavalent Chromium (Cr6+) < 0.1% or 1,000ppm, Polybrominated biphenyls (PBB) < 0.1% or 1,000ppm, and Polybrominated diphenyl Ethers (PBDE) < 0.1% or 1,000ppm.

In order to meet the RoHS compliant directives, EXOR INTERNATIONAL has established an engineering and manufacturing task force to implement the introduction of green products. The task force will ensure that we follow the standard EXOR INTERNATIONAL development procedure and that all the new RoHS components and new manufacturing processes maintain the highest industry quality levels for which EXOR INTERNATIONAL are renowned.

The model selection criteria will be based on market demand. Vendors and suppliers will ensure that all designed components will be RoHS compliant.

Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.

Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Safety Precautions

1. Read these safety instructions carefully.

2. Keep this User Manual for later reference.

3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

5. Keep this equipment away from humidity.

6. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.

7. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.

8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.

9. Place the power cord in a way so that people will not step on it. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the product and that it matches the voltage and current marked on the product's electrical range label. The voltage and current rating of the cord must be greater than the voltage and current rating marked on the product.

10. All cautions and warnings on the equipment should be noted.

11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

12. Never pour any liquid into an opening. This may cause fire or electrical shock.

13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.

14. If one of the following situations arises, get the equipment checked by service personnel:
    a. The power cord or plug is damaged.
    b. Liquid has penetrated into the equipment.
    c. The equipment has been exposed to moisture.
    d. The equipment does not work well, or you cannot get it to work according to the user's manual.
    e. The equipment has been dropped and damaged.
    f. The equipment has obvious signs of breakage.

15. Do not place heavy objects on the equipment.

16. The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.

17. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.

Technical Support and Assistance

1. For the most updated information of EXOR INTERNATIONAL products, visit EXOR INTERNATIONAL's website at www.exorint.net.

2. For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:
   – Product name and serial number
   – Detailed information of the peripheral devices
   – Detailed information of the installed software (operating system, version, application software, etc.)
   – A complete description of the problem
   – The exact wordings of the error messages

Warning!
1. Handling the unit: carry the unit with both hands and handle it with care.

2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

3. CompactFlash: Turn off the unit's power before inserting or removing a CompactFlash storage card.

Conventions Used in this Manual

Warning:
Information about certain situations, which if not observed, can cause personal injury. This will prevent injury to yourself when performing a task.

CAUTION! Caution:

Information to avoid damaging components or losing data.

Note:
Provides additional information to complete a task easily.

Package Contents

Before continuing, verify that the package you received is complete. Your package should have all the items listed in the table.

eTOP-IPC1560T

Item	Description	Qty
1	Panel Mount Kit	8
2	Driver CD	1
3	Touch Pen	1
4	Flat Head for HDD Installation	8
5	*Terminal blocks 3-pin Phoenix Contact Plug	1

eTOP-IPC1960T

Item	Description	Qty
1	Panel Mount Kit	8
2	Driver CD	1
3	Touch Pen	1
4	Flat Head for HDD Installation	8
5	*Terminal blocks 3-pin Phoenix Contact Plug	1

* Terminal blocks 3-pin Phoenix Contact Plug is only for DC input model.

Panel Mount Kit

Driver CD

Touch Pen

Flat Head for HDD Installation

Terminal blocks 3-pin Phoenix Contact Plug

Note: Package contents may vary depending on your country region. Some items may be optional. Please contact your local distributor for more information.

Ordering Information

The following provides ordering information for the Industrial Panel PC series.

eTOP-IPC1560T Series

• eTOP-IPC1560TP2E-DC

15" XGA LED backlight fanless touch panel PC, Intel® Core™ i5-3610ME 2.7GHz, touch screen, 4GB DDR3, 3 x COMs, DC power input

• eTOP-IPC1560TP2E-AC

15" XGA LED backlight fanless touch panel PC, Intel® Core™ i5-3610ME 2.7GHz, touch screen, 4GB DDR3, 6 x COMs, 4 x 4GPIO, 4 x 4DIO with isolated protection, AC power input

• eTOP-IPC1560TE

15" XGA LED backlight fanless touch panel PC, Intel® Core™ i5-3610ME 2.7GHz, touch screen, 4GB DDR3, 3 x COMs, isolated protection DC Power

Optional

- **24V/5A, 120W AC to DC DIN rail power adapter w/ o power cord (for eTOP-IPC1560TP2EDC and eTOP-IPC1560TE)**
- **Riser card 2 x PCI slots**
- **Riser card 2 x PCIe x4 slots**
- **Fieldbus module universal kit (for eTOP-IPC1560TP2E-DC and eTOP-IPC1560TE)**

eTOP-IPC1960T Series

• eTOP-IPC1960TP2E-DC

19" SXGA LED backlight fanless touch panel PC, Intel® Core™ i5-3610ME 2.7GHz, touch screen, 4GB DDR3, 3 x COMs, DC power input

• eTOP-IPC1960TP2E-AC

19" SXGA LED backlight fanless touch panel PC, Intel® Core™ i5-3610ME 2.7GHz, touch screen, 4GB DDR3, 6 x COMs, 4 x 4GPIO, 4 x 4DIO with isolated protection, AC power input

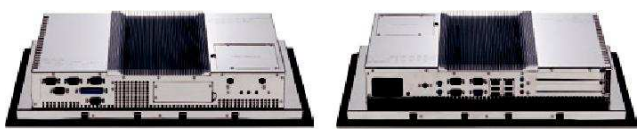
Optional

- **24V/5A, 120W AC to DC DIN rail power adapter w/ o power cord (for eTOP-IPC1960TP2EDC only)**
- **Riser card 2 x PCI slots**
- **Riser card 2 x PCIe x4 slots**
- **Fieldbus module universal kit (for eTOP-IPC1960TP2E-DC only)**

Chapter 1: Product Introduction

eTOP-IPC1560T Series

eTOP-IPC1560TP2E-DC



eTOP-IPC1560TP2E-AC

eTOP-IPC1560TE

Key Features

- 4:3 15" XGA Fanless Panel Computer
- Powerful 2nd/3rd generation Intel® Core™ processor
- Two expansion slots for add-on PCI or/and PCIe cards
- Optional 3.5G/Wi-Fi module/2.5" HDD/3 x Coms/GPIO/DIO/
- Dimming Control Button
- Front accessible USB2.0 for easy of field maintenance
- Metal housing with robust aluminum front bezel for harsh environment
- IP65 compliant front panel
- Support fieldbus module, JMobile HMI, Citect SCADA and CODESYS
- SoftLogic (optional)
- Optional: wide range DC power input model/isolation protection DC
- power input model

Specifications

System

▪CPU: Support 2nd/3rd gen. Intel® Core™ processor family, rPGA 988
  — Intel® Core™ i7-3520ME (2 x 2.9GHz, 4M cache, Max. TDP 35W)
  — Intel® Core™ i5-3610ME (2 x 2.7GHz, 3M cache, Max. TDP 35W) (Default)
  — Intel® Core™ i3-3120ME (2 x 2.4GHz, 3M cache, Max. TDP 35W)
  — Intel® Celeron® B810 (2 x 1.6GHz, 2M cache, Max. TDP 35W)
  — Intel® Pentium® B950 (2 x 2.1GHz, 2M cache, Max. TDP 35W)
▪BIOS: AMI BIOS
▪System chipset: Intel® HM76 Express chipset
▪System memory: 1x 204-pin DDR3 SO-DIMM socket, 4G DDR3 (default), support up to 8GB DDR3-1066/1333, non-ECC and un-buffered
▪Storage Device:
  — 1x external locked CFast socket
  — 2x hard drive bay: optional 2x 2.5" SATA HDD
▪Watchdog timer: Watchdog timeout can be programmed by software from 1 second to 255 seconds and from 1 minute to 255 minutes (Tolerance 15% under room temperature 25°C)
▪H/W status monitor: Monitoring system temperature, and voltage
▪Expansion:
  — 2x Mini-PCIe sockets (support optional Wi-Fi or 3.5G module)
  — 2x expansion slots for add-on PCI or/and PCIe cards
  — 1x PCI and 1x PCIe x4 slots (default)
  — 2x PCIe x4 slots
  — 2x PCI slots
▪Panel backlight control button: increase brightness/decrease brightness/ backlight on/off (for ETOP-IPC 1560TP2E-AC only)

Rear I/O

For All
▪2x PS2 keyboard/mouse
▪2nd display VGA port: 1x DB15
▪Ethernet: 2x RJ45
For ETOP-IPC 1560TP2E-DC only
▪USB: 5x USB2.0 (1 in front)
▪Audio port: 1x Line-out; 1x Line-in; 1x MIC-in
▪COM #1: RS232/422/485 w/ RI or 5V or 12V selection
▪COM #2: RS232/422/485 w/ RI or 5V or 12V selection
▪COM #3: RS232 w/ RI or 5V or 12V selection
▪ATX power switch
▪Reset button
For ETOP-IPC 1560TP2E-AC only
▪USB: 5x USB2.0 (1 in front)
▪Audio port: 1x Line-out; 1x Line-in; 1x MIC-in
▪COM #1: RS232/422/485 w/ 2.5kv isolated protection
▪COM #2: RS232/422/485 w/ 2.5kv isolated protection
▪COM #3: RS232 w/ RI or 5V or 12V selection
▪COM #4: RS232 w/ RI or 5V or 12V selection
▪COM #5: RS232
▪COM #6: RS232
▪DIO w/ 2.5kv isolated protection:
  — 4x Digital Input (source type)
  — 4x Digital Output (sink type)
▪GPIO: 4x digital in/4x digital out
▪LPT: Parallel port
▪AC Power switch
▪Reset button

For ETOP-IPC 1560TE only

- USB: 4x USB2.0 (Hidden)
- COM #1: RS232/422/485 w/ 2.5kv isolated protection
- COM #2: RS232/422/485 w/ 2.5kv isolated protection
- COM #3: RS232 w/ RI or 5V or 12V selection
- ATX Power switch
- Reset button

Audio

- AC97 codec: Realtek ALC886-GR
- Audio interface: Line-out/Line-in/MIC-in audio Jack

Ethernet

- LAN chip: dual Intel® 82574L Gigabit LAN
- Ethernet interface: 10/100/1000 Based-Tx Ethernet compatible

Fieldbus

- ETOP-IPC 1560TP2E-DC/ETOP-IPC 1560TE: support up to two fieldbus module (1 universal kit and 1 special kit)
- ETOP-IPC 1560TP2E-AC: support one special fieldbus module kit

Mechanical & Environment

- Color: pantone 432C\ RAL 70 24 front bezel
- Enclosure: aluminum front bezel with SPPC nickel plated housing
- IP protection: IP65 front
- Mounting: panel/wall/stand/VESA 100mm x 100mm
- Power

For ETOP-IPC 1560TP2E-DC

— Power Input: +9 to 30VDC

— Power Adapter: optional AC to DC DIN rail power adapter (+24V, 120W)

For ETOP-IPC 1560TP2E-AC

— Power input: 100-240V~, 1.5A, 50-60Hz; fuse: 250VAC/3A

— Power connector: AC inlet (IEC60320 C14) — Power supply: 120W

For ETOP-IPC 1560TE

— Power input: +24V DC+-20% with 1.5kv isolated protection — Fuse: 250V/10A

- Vibration:
  — IEC 68 2-64 (w/ HDD)
  — 1Grms @ sine, 5~500Hz, 1hr/axis (HDD operating) –
  – 2Grms @ sine, 5~500Hz, 1hr/axis (CFast operating)
  — 2.2Grms @ random condition, 5~500Hz, 0.5hr/axis (non-operating)
- Shock:
  — IEC 68 2-27
  — HDD: 20G @ wall mount, half sine, 11ms
- Operating temperature: -10°C to 50°C
  * Intel® Core™ i7/Intel® Celeron® B810/Intel® Pentium® B950: -10°C to 40°C
- Storage temperature: -20°C to 75°C
- Operating humidity: 10%~90% relative humidity, non-condensing Limits to be at 90% RH at max 50°C

Certifications

- CE (including EN61000-6-2/EN61000-6-4)

eTOP-IPC1960T Series

eTOP-IPC1960TP2E-DC

eTOP-IPC1960TP2E-AC

Key Features

- 4:3 19" SXGA Fanless Panel Computer
- Powerful 2nd/3rd generation Intel® Core™ processor
- Two expansion slots for add-on PCI or/and PCIe cards
- Optional 3.5G/Wi-Fi module/2.5" HDD/3x Coms/GPIO/DIO/Dimming Control Button
- Front accessible USB2.0 for easy of field maintenance
- Metal housing with robust aluminum front bezel for harsh environment
- IP66 compliant front panel
- Support fieldbus module, JMobile HMI, Citect SCADA and CODESYS SoftLogic (optional)
- Wide range DC power input model

Specifications

System

▪CPU: Support 2nd/3rd gen. Intel® Core™ processor family, rPGA 988
  — Intel® Core™ i7-3520ME (2 x 2.9GHz, 4M cache, Max. TDP 35W)
  — Intel® Core™ i5-3610ME (2 x 2.7GHz, 3M cache, Max. TDP 35W) (Default)
  — Intel® Core™ i3-3120ME (2 x 2.4GHz, 3M cache, Max. TDP 35W)
  — Intel® Celeron® B810 (2 x 1.6GHz, 2M cache, Max. TDP 35W)
  — Intel® Pentium® B950 (2 x 2.1GHz, 2M cache, Max. TDP 35W)
▪BIOS: AMI BIOS
▪System chipset: Intel® HM76 Express chipset
▪System memory: 1x 204-pin DDR3 SO-DIMM socket, 4G DDR3 (default), support up to 8GB DDR3-1066/1333, non-ECC and un-buffered
▪Storage Device:
  — 1x external locked CFast socket
  — 2x hard drive bay: optional 2x 2.5" SATA HDD
▪Watchdog timer: Watchdog timeout can be programmed by software from 1 second to 255 seconds and from 1 minute to 255 minutes (Tolerance 15% under room temperature 25°C)
▪H/W status monitor: Monitoring system temperature, and voltage
▪Expansion:
  — 2x Mini-PCIe sockets (support optional Wi-Fi or 3.5G module)
  — 2x expansion slots for add-on PCI or/and PCIe cards
  — 1x PCI and 1x PCIe x4 slots (default)
  — 2x PCIe x4 slots
  — 2x PCI slots
▪Panel backlight control button: increase brightness/decrease brightness/ backlight on/off (for ETOP-IPC 1960TP2E-AC only)

Rear I/O

For All
▪2x PS2 keyboard/mouse
▪2nd display VGA port: 1x DB15
▪Ethernet: 2x RJ45
▪USB: 5x USB2.0 (1 in front)
▪Audio port: 1x Line-out; 1x Line-in; 1x MIC-in
For ETOP-IPC 1960TP2E-DC only
▪COM #1: RS232/422/485 w/ RI or 5V or 12V selection
▪COM #2: RS232/422/485 w/ RI or 5V or 12V selection
▪COM #3: RS232 w/ RI or 5V or 12V selection
▪ATX power switch
▪Reset button
For ETOP-IPC 1960TP2E-AC only
▪COM #1: RS232/422/485 w/ 2.5kv isolated protection
▪COM #2: RS232/422/485 w/ 2.5kv isolated protection
▪COM #3: RS232 w/ RI or 5V or 12V selection
▪COM #4: RS232 w/ RI or 5V or 12V selection
▪COM #5: RS232
▪COM #6: RS232
▪DIO w/ 2.5kv isolated protection:
  — 4x Digital Input (source type)
  — 4x Digital Output (sink type)
▪GPIO: 4x digital in/4x digital out
▪LPT: Parallel port
▪AC Power switch
▪Reset button

Audio

- AC97 codec: Realtek ALC886-GR
- Audio interface: Line-out/Line-in/MIC-in audio Jack

Ethernet

- LAN chip: dual Intel® 82574L Gigabit LAN
- Ethernet interface: 10/100/1000 Based-Tx Ethernet compatible

Fieldbus

- ETOP-IPC 1960TP2E-DC: support up to two Fieldbus Module (1 universal kit and 1 special kit)
- ETOP-IPC 1960TP2E-AC: support one special Fieldbus Module kit

Mechanical & Environment

- Color: pantone 432C\ RAL 70 24 front bezel
- Enclosure: aluminum front bezel with SPPC nickel plated housing
- IP protection: IP65 front
- Mounting: panel/wall/stand/VESA 100mm x 100mm
- Power

For ETOP-IPC 1960TP2E-DC

— Power input: +9 to 30VDC

— Power adapter: optional AC to DC DIN rail power adapter (+24V, 120W)

For ETOP-IPC 1960TP2E-AC

— Power input: 100-240V~, 1.5A, 50-60Hz; Fuse: 250VAC/3A — Power connector: AC inlet (IEC60320 C14)

— Power supply: 120W

- Vibration:

— IEC 68 2-64 (w/ HDD)

— 1Grms @ sine, 5~500Hz, 1hr/axis (HDD operating) –

– 2Grms @ sine, 5~500Hz, 1hr/axis (CFast operating)

— 2.2Grms @ random condition, 5~500Hz, 0.5hr/axis (non-operating)

- Shock:

— IEC 68 2-27

— HDD: 20G @ wall mount, half sine, 11ms

- Operating temperature: -10°C to 50°C

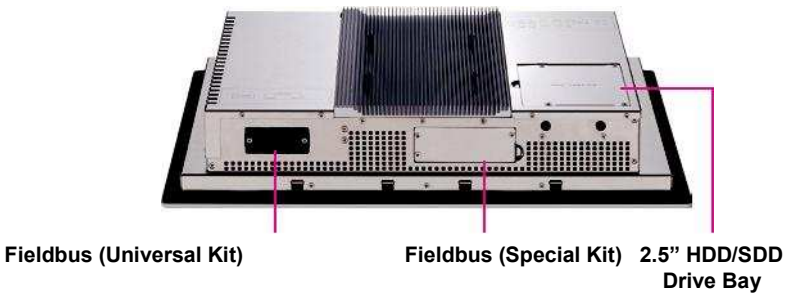
  * Intel® Core™ i7/Intel® Celeron® B810/Intel® Pentium® B950: -10°C to 40°C
- Storage temperature: -20°C to 75°C
- Operating humidity: 10%~90% relative humidity, non-condensing Limits to be at 90% RH at max 50°C

Certifications

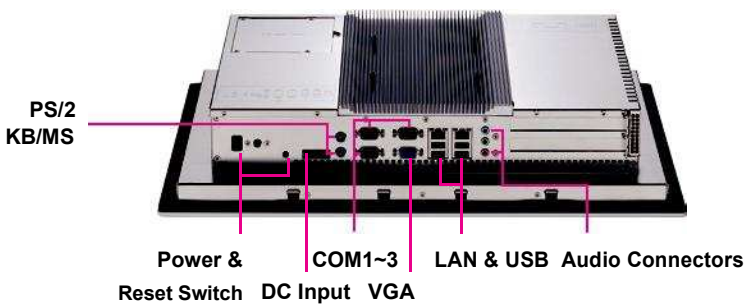
- CE (including EN61000-6-2/EN61000-6-4)

Knowing Your eTOP-IPC1560T Series

eTOP-IPC1560TP2E-DC Rear Top



eTOP-IPC1560TP2E-DC Rear Bottom



Fieldbus (Universal Kit and Special Kit)
Expansion slots for add-on fieldbus modules.

2.5" HDD/SDD Drive Bay
Used to install a 2.5" HDD/SSD.

Power Switch
Press to power-on or power-off the system.

Reset Switch
Press this button to restart the system.

DC Input
Used to plug a DC power cord.

PS/2 KB/MS
Used to connect a PS/2 keyboard and a PS/2 mouse.

COM 1 to COM 3
COM 1 and COM 2 ports have 2.5kV isolated protection and support RS232/422/485 compatible serial devices.
COM 3 supports RS232 and 5V, 12V or RI by selection.

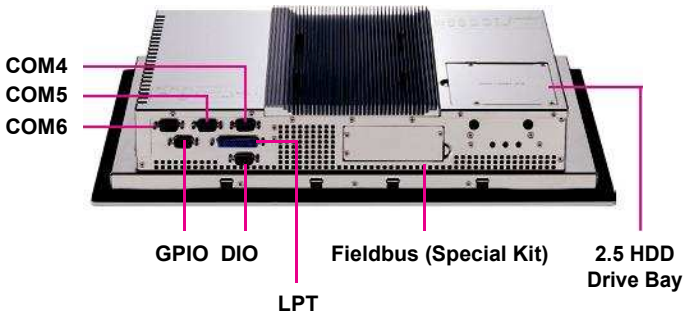
VGA
Used to connect an analog VGA monitor.

LAN
Used to connect the system to a local area network. LAN1 supports Wake up on LAN.

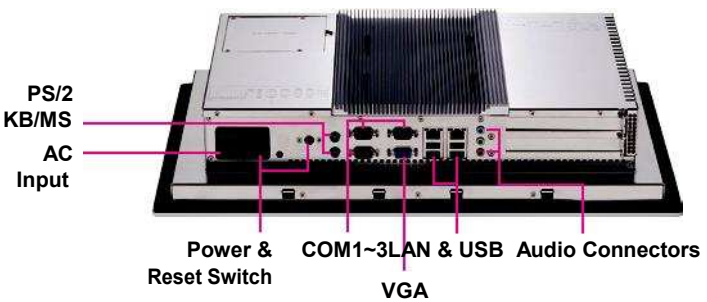
USB
Used to connect USB 2.0/1.1 devices.

Audio Connectors
Line-in, mic-in and line-out ports used to connect audio devices such as external microphones, speakers and headphones.

eTOP-IPC1560TP2E-AC Rear Top



eTOP-IPC 1560TP2E-AC Rear Bottom



COM 4 to COM 6
These COM ports support RS232 compatible serial devices. COM 4 supports 5V, 12V or RI by selection.

GPIO
The GPIO connector supports 4 digital input and 4 digital output.

DIO
The GPIO connector supports 4 digital input and 4 digital output with 2.5kV isolated protection.

LPT
Parallel port used to connect LPT devices.

Fieldbus (Special Kit)
Expansion slot for add-on fieldbus modules.

2.5" HDD/SDD Drive Bay
Used to install a 2.5" HDD/SSD.

Power Switch
Press to power-on or power-off the system.

Reset Switch
Press this button to restart the system.

AC Input
Used to plug an AC power cord.

PS/2 KB/MS
Used to connect a PS/2 keyboard and a PS/2 mouse.

COM 1 to COM 3

COM 1 and COM 2 ports have 2.5kV isolated protection and support RS232/422/485 compatible serial devices.
COM 3 supports RS232 and 5V, 12V or RI by selection.

VGA

Used to connect an analog VGA monitor.

LAN

Used to connect the system to a local area network. LAN1 supports Wake up on LAN.

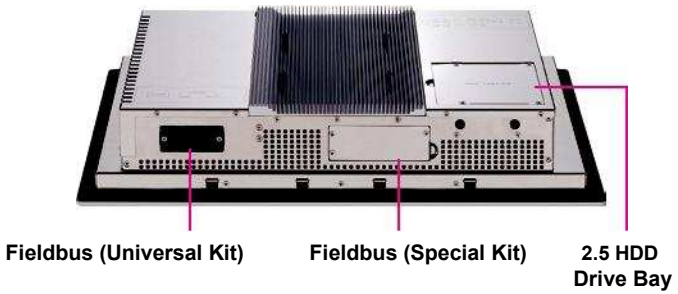
USB

Used to connect USB 2.0/1.1 devices.

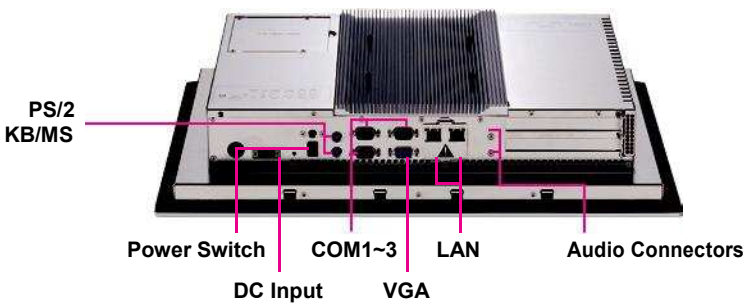
Audio Connectors

Line-in, mic-in and line-out ports used to connect audio devices such as external microphones, speakers and headphones.

eTOP-IPC1560TE Rear Top



eTOP-IPC1560TE Rear Bottom



Fieldbus (Universal Kit and Special Kit)
Expansion slots for add-on fieldbus modules.

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Used to install a 2.5” HDD/SSD.

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Reset Switch
Press this button to restart the system.

DC Input
Used to plug a DC power cord.

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COM 3 supports RS232 and 5V, 12V or RI by selection.

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LAN
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Audio Connectors
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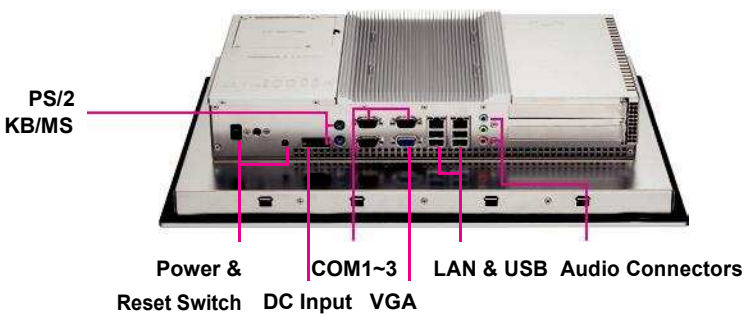
Knowing Your eTOP-IPC1960T Series

eTOP-IPC1960TP2E-DC Rear Top

eTOP-IPC1960TP2E-DC Rear Bottom



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Audio Connectors
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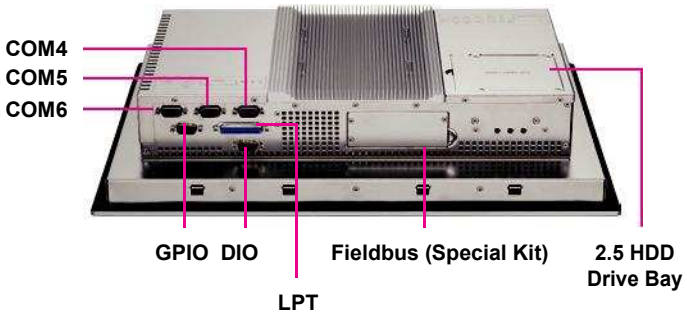
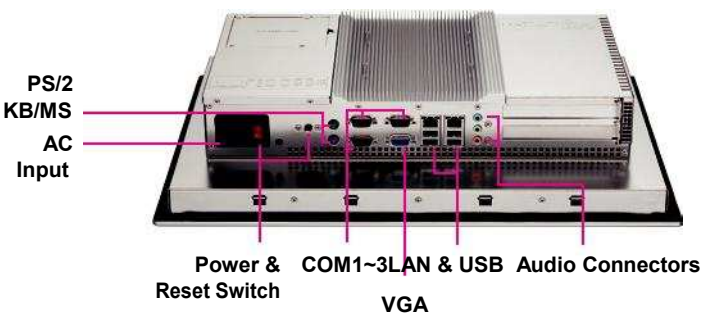
eTOP-IPC1960TP2E-AC Rear Top



eTOP-IPC1960TP2E-AC Rear Bottom



COM 4 to COM 6
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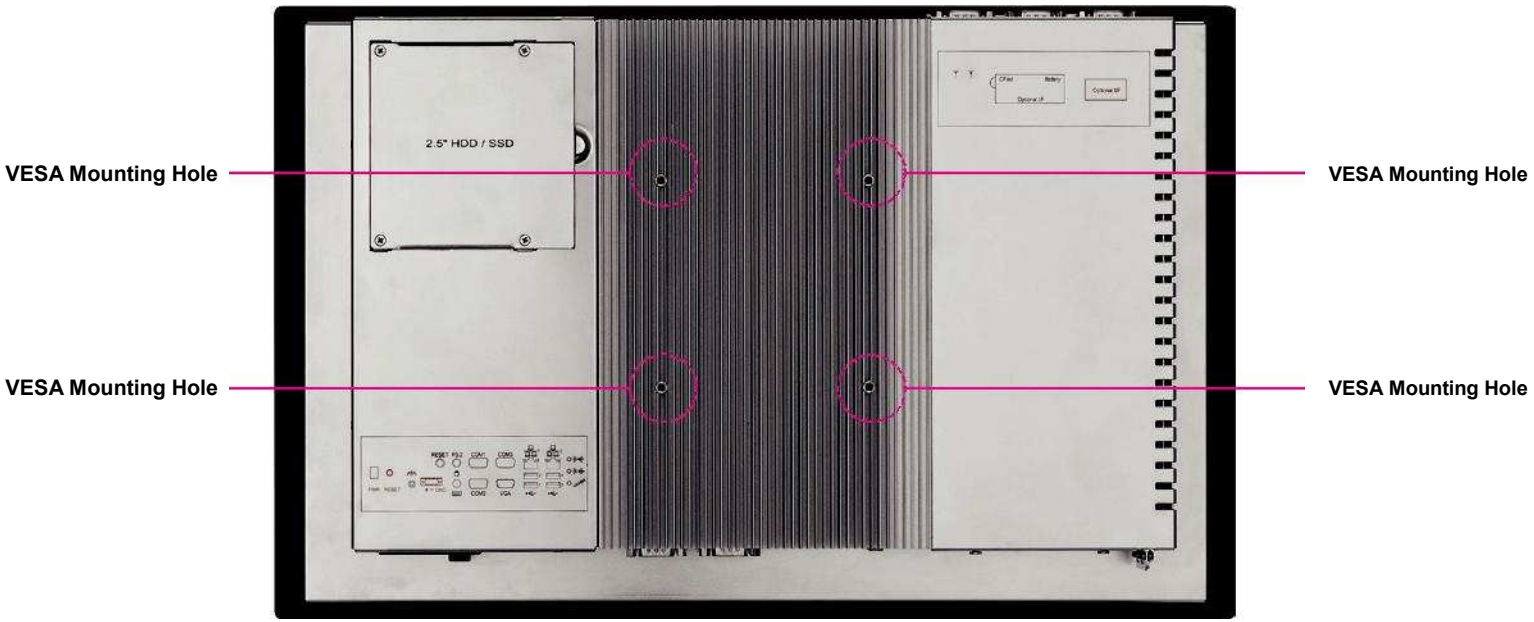
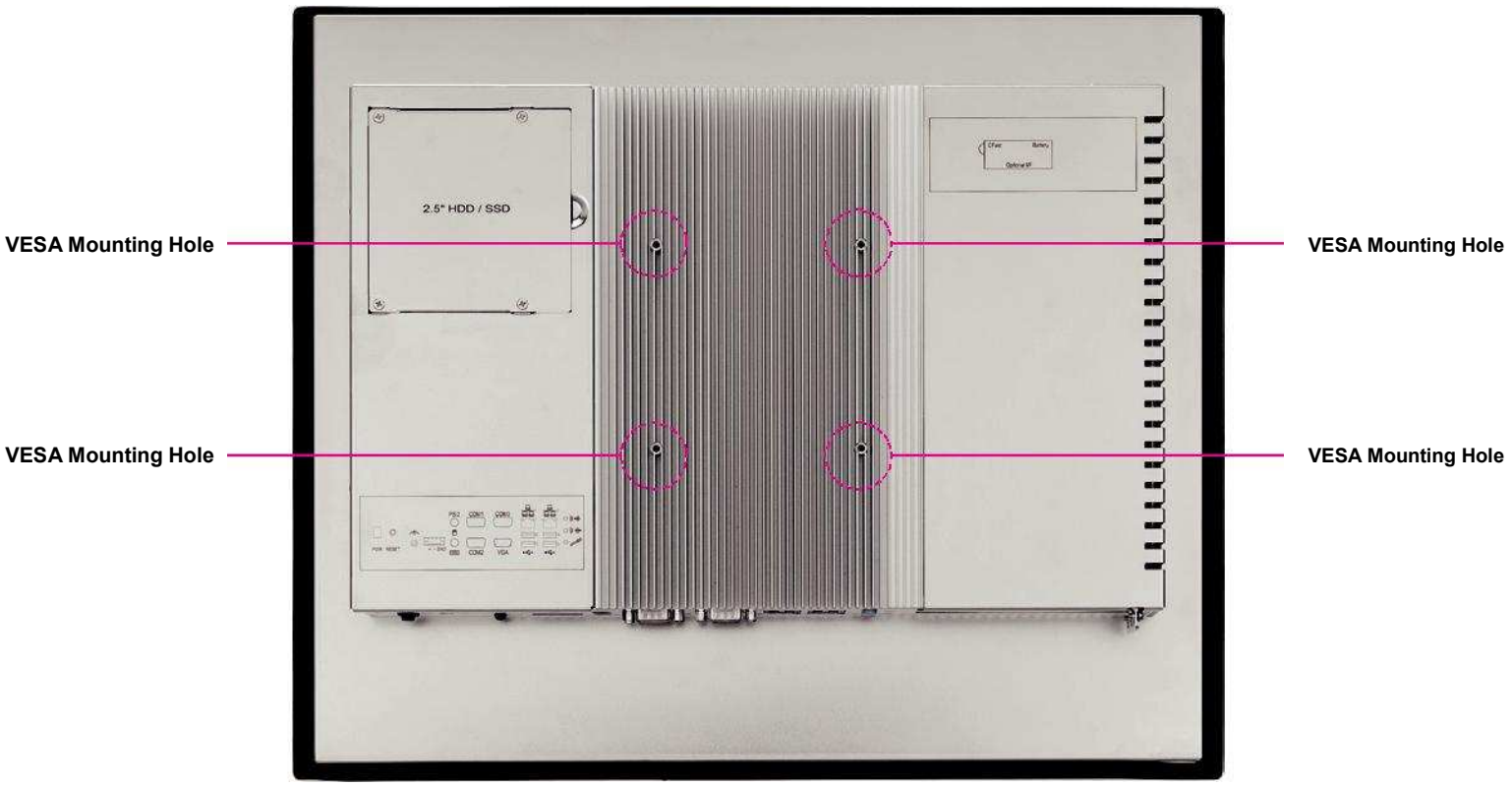
eTOP-IPC1560T Series Rear



VESA Mounting Holes

These are mounting holes for VESA mount (100x100mm)

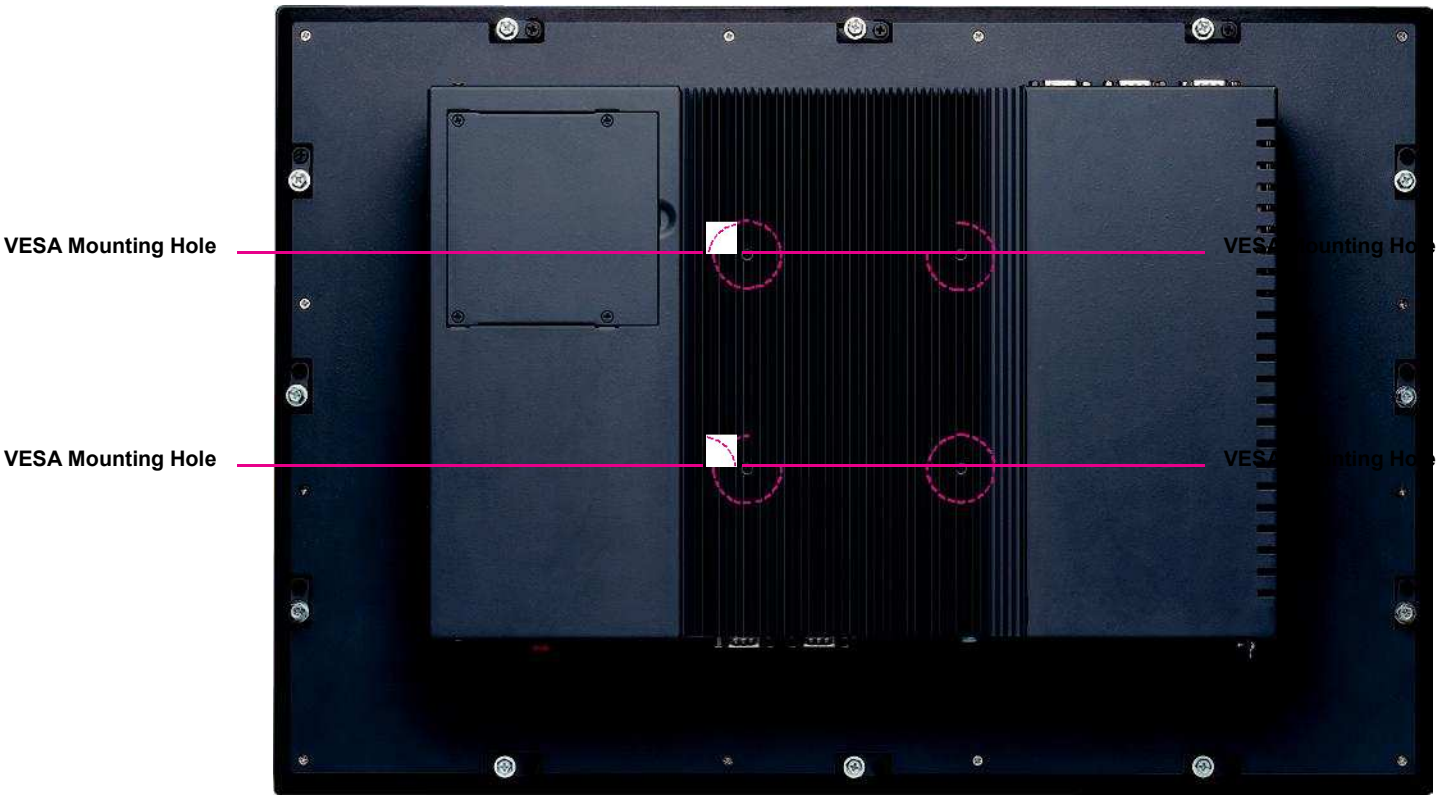
eTOP-IPC1960T Series Rear



VESA Mounting Holes

These are mounting holes for VESA mount (100x100mm)

eTOP-IPC2160P Rear

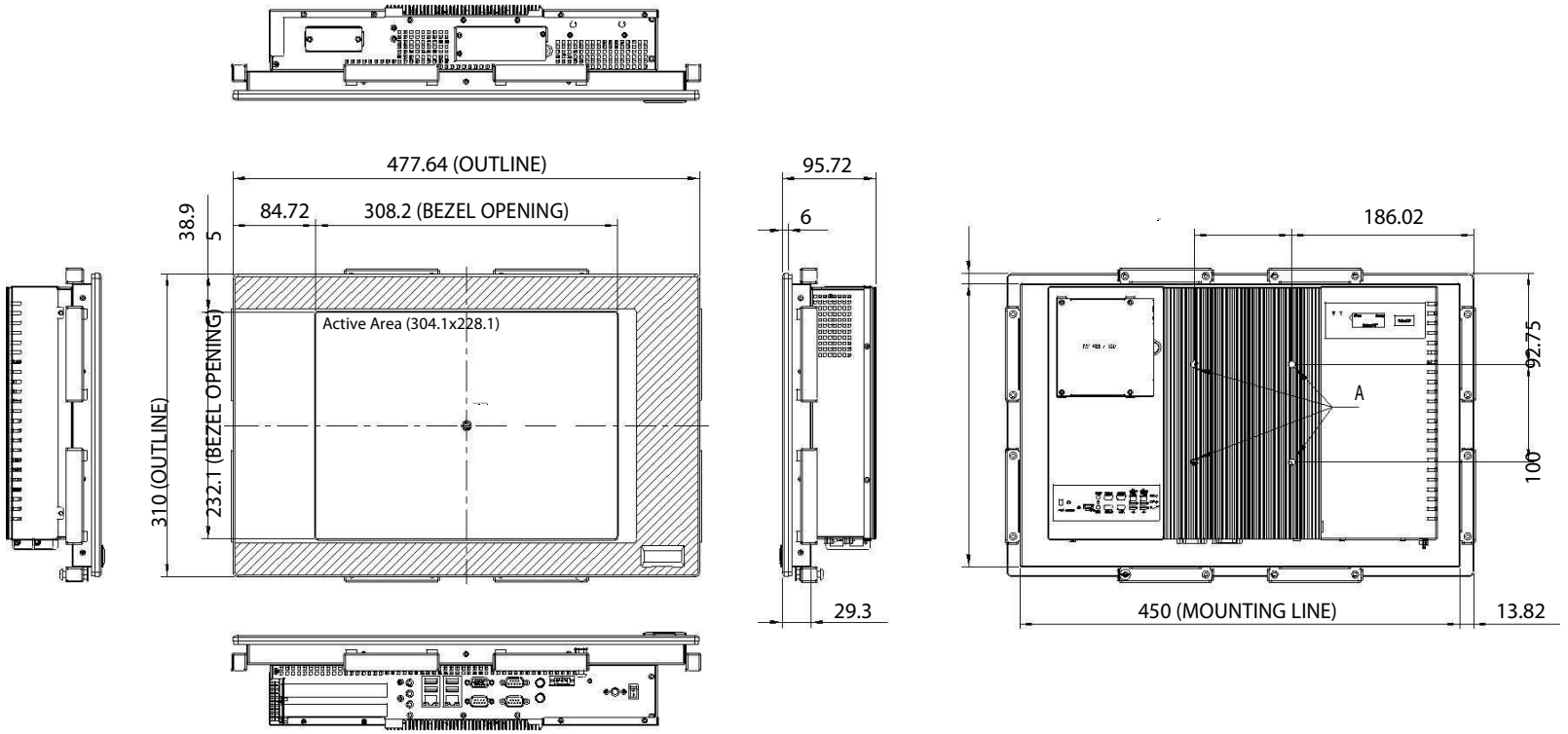


VESA Mounting Holes

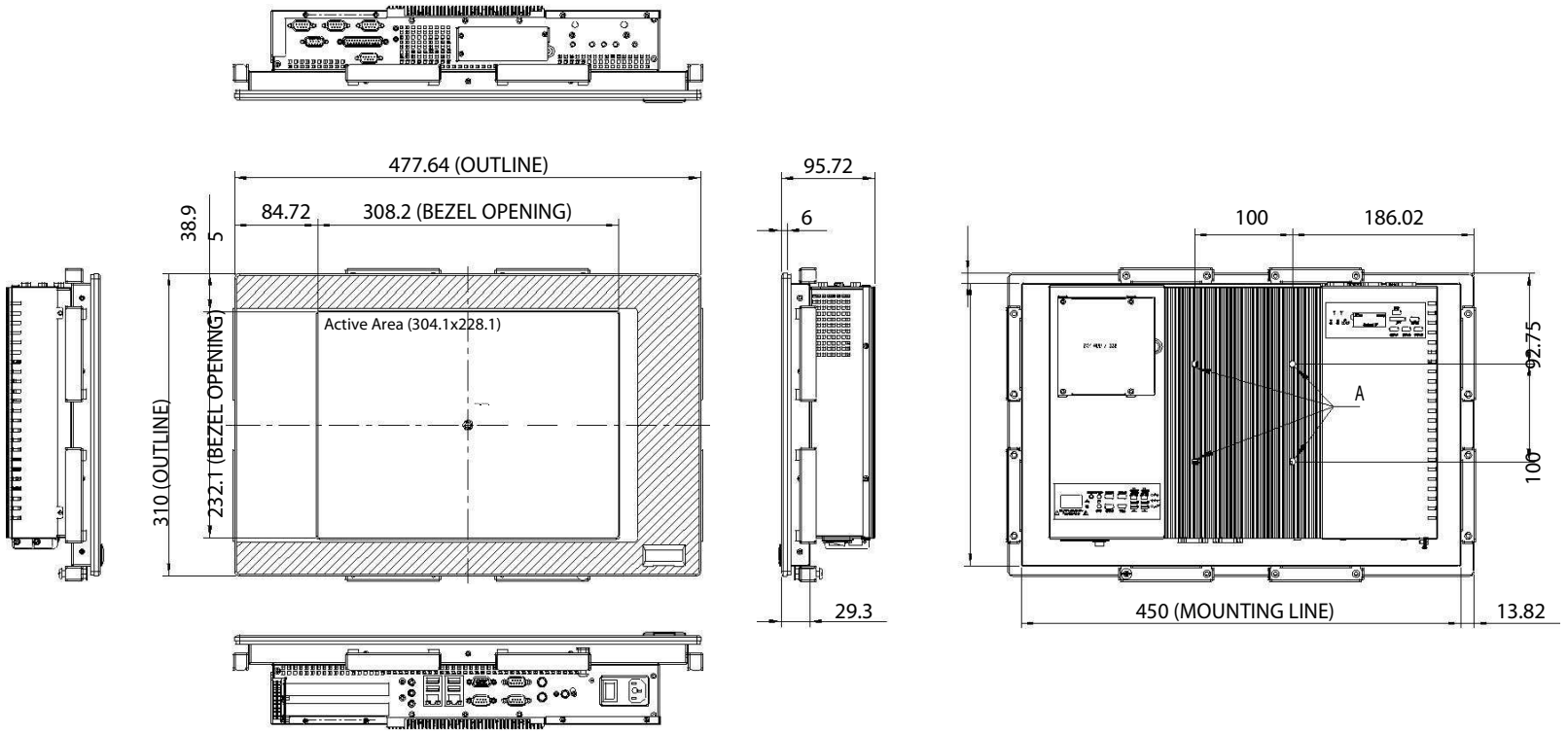
These are mounting holes for VESA mount (100x100mm)

Mechanical Dimensions

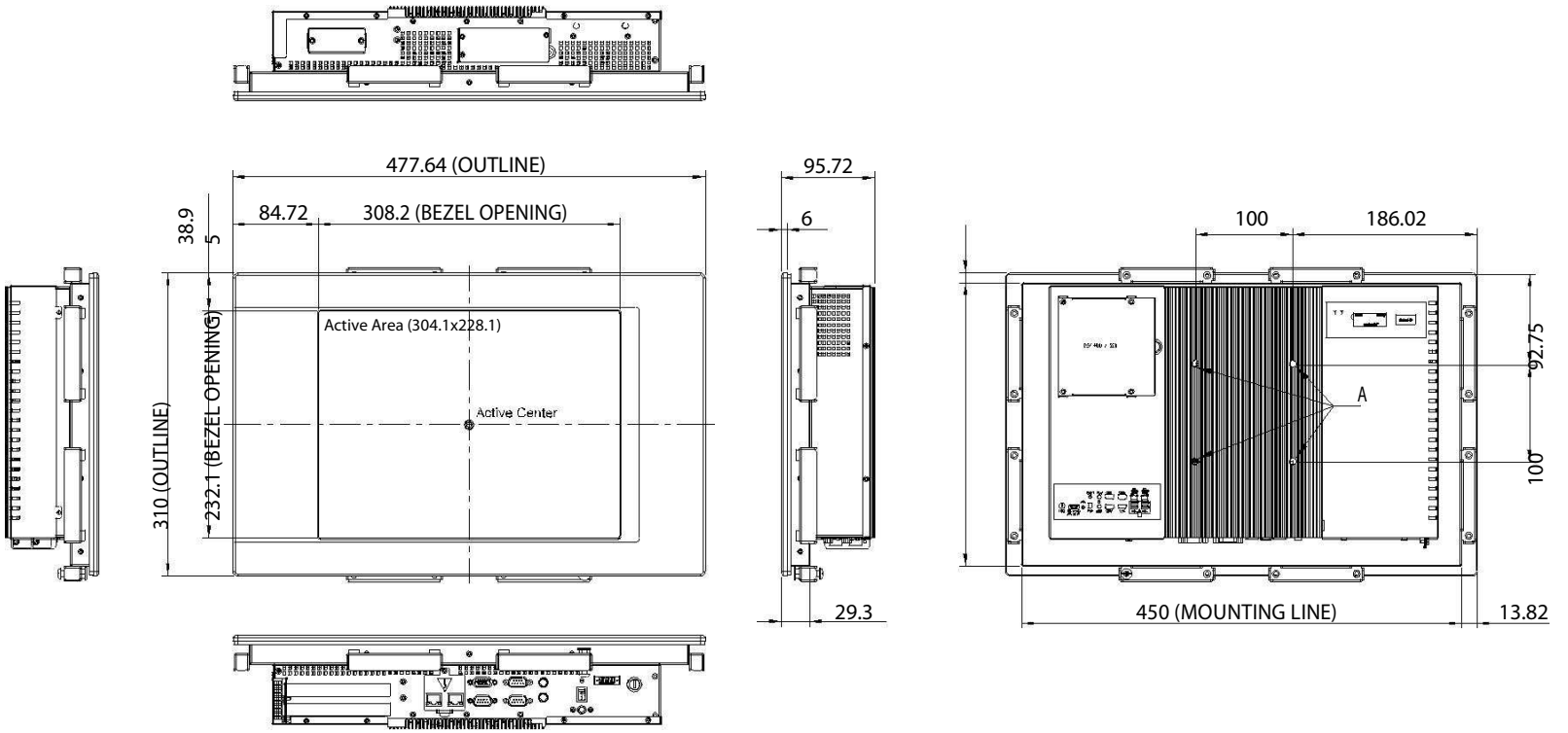
eTOP-IPC1560TP2E-DC



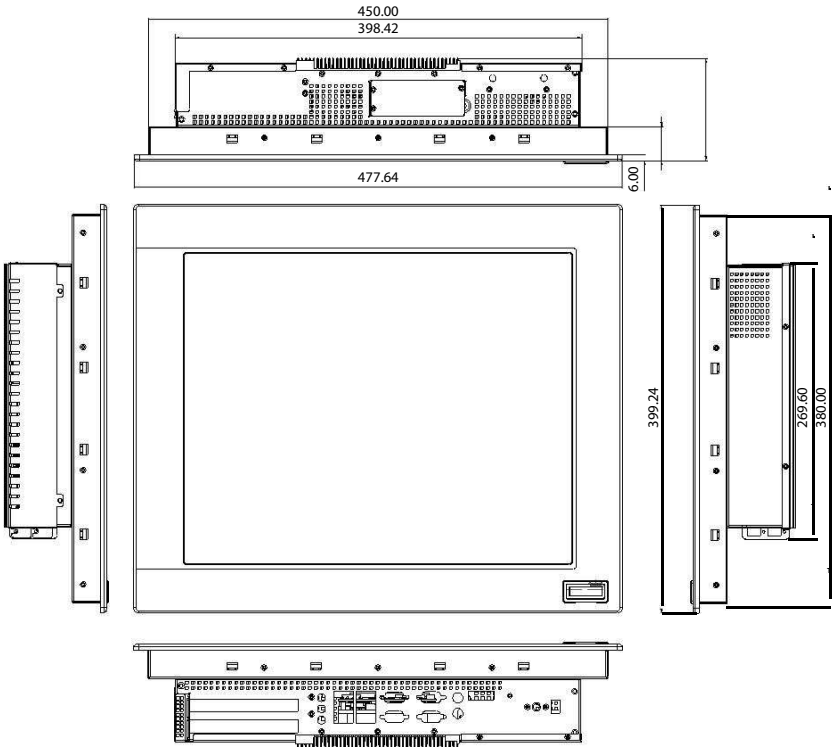
eTOP-PC1560TP2E-AC



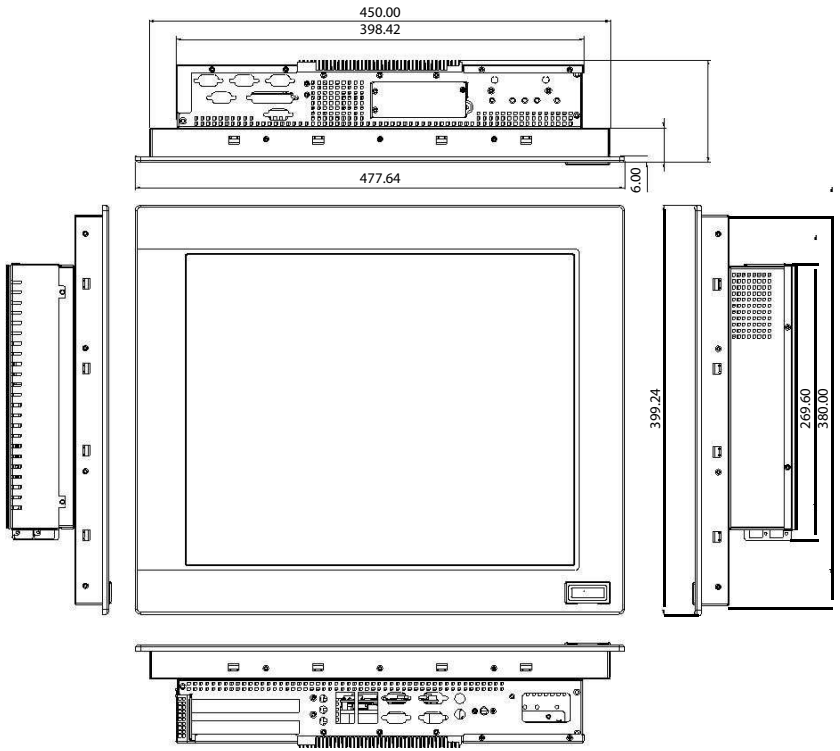
eTOP-IPC1560TE



eTOP-IPC1960TP2E-DC



eTOP-IPC1960TP2E-AC



Chapter 2: Jumpers and Connectors

This chapter describes how to set the jumpers and connectors on the motherboard in the eTOP-IPC1560T/1960T/2160P series.

Before You Begin

- Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.
- Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:
  – A Philips screwdriver
  – A flat-tipped screwdriver
  – A set of jewelers screwdrivers
  – A grounding strap
  – An anti-static pad
- Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.
- Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environments tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on computers that are still connected to a power supply can be extremely dangerous.

Follow the guidelines below to avoid damage to your computer or yourself:

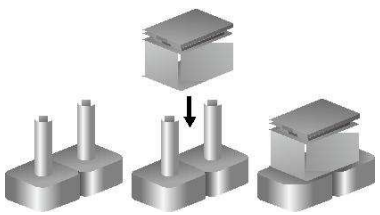
- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Don’t flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

Jumper Settings

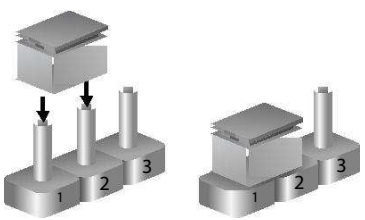
A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is short. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is open.

Refer to the illustrations below for examples of what the 2-pin and 3-pin jumpers look like when they are short (on) and open (off).

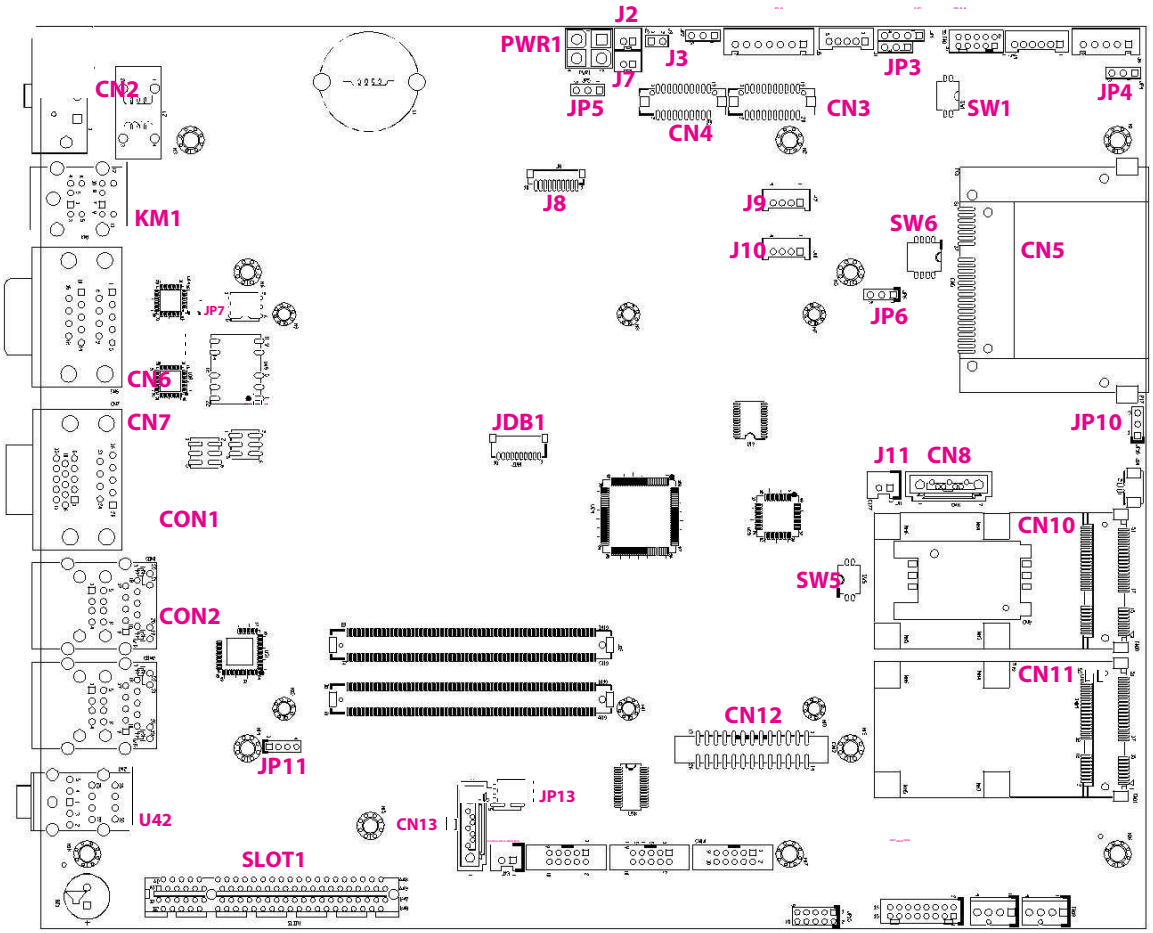
Two-Pin Jumpers: Open (Left) and Short (Right)



Three-Pin Jumpers: Pins 1 and 2 are Short



Locations of the Jumpers and Connectors



Jumpers and DIP Switch Settings

AT/ATX Power Type Select

Connector type: 1x3 3-pin header, 2.54mm pitch Connector location: JP5

Pin	Settings
1-2 On	AT
2-3 On	ATX

Pin	Definition
1	ATMODE
2	MODE_SEL
3	ATXMODE

LCD Power Select

Connector type: 1x3 3-pin header, 2.54mm pitch Connector location: JP2

Pin	Settings
1-2 On	VCC3
2-3 On	VCC5

1-2 On: default

Pin	Definition
1	VCC3
2	VCCLCDIN
3	VCC5

CCFL Power Select

Connector type: 1x3 3-pin header, 2.54mm pitch Connector location: JP3

Pin	Settings
1-2 On	VCC3
2-3 On	VCC5

1-2 On: default

Pin	Definition
1	VCC3
2	P_BKLTCTRL3
3	VCC5

Touch Panel Type Select

Connector type: 1x3 3-pin header, 2.54mm pitch Connector location: JP4

Pin	Settings
1-2 On	5 Wire
2-3 On	4 Wire

1-2 On: default

Pin	Definition
1	NC
2	TOUCH_YU
3	SENSE

CMOS Clear Select

Connector type: 1x3 3-pin header, 2.54mm pitch Connector location: JP10

Pin	Settings
1-2 On	Normal
2-3 On	Clear CMOS

1-2 On: default

Pin	Definition
1	3VSB
2	VBAT
3	GND

RI Feature Selection (COM1)

Connector type: 2x3 6-pin header, 2.0mm pitch Connector location: JP7

Pin	Settings
1-2 On	RI (Default)
3-4 On	VCC5
5-6 On	+12V

1-2 On: default

Pin	Definition	Pin	Definition
1	SP1_PSRI#	2	SP1_RI#
3	SP1_PSRI#	4	ISO_VCC5
5	SP1_PSRI#	6	ISO_+12V

RI Feature Selection (COM2)

Connector type: 2x3 6-pin header, 2.0mm pitch Connector location: JP8

Pin	Settings
1-2 On	RI (Default)
3-4 On	VCC5
5-6 On	+12V

1-2 On: default

Pin	Definition	Pin	Definition
1	SP2_PSRI#	2	SP2_RI#
3	SP2_PSRI#	4	ISO_VCC5_A
5	SP2_PSRI#	6	ISO_+12V

RI Feature Selection (COM3)

Connector type: 2x3 6-pin header, 2.0mm pitch Connector location: JP9

Pin	Settings
1-2 On	RI (Default)
3-4 On	VCC5
5-6 On	+12V

1-2 On: default

Pin	Definition	Pin	Definition
1	SP3_PSRI#	2	SP3_RI#
3	SP3_PSRI#	4	ISO_VCC5
5	SP3_PSRI#	6	ISO_+12V

RI Feature Selection (COM4)

Connector type: 2x3 6-pin header, 2.0mm pitch
Connector location: JP13

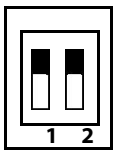
Pin	Settings
1-2 On	RI (Default)
3-4 On	VCC5
5-6 On	+12V

1-2 On: default

Pin	Definition	Pin	Definition
1	SP4_PSRI#	2	SP4_RI#
3	SP4_PSRI#	4	ISO_VCC5
5	SP4_PSRI#	6	ISO_+12V

Dimming Type Select

Connector type: 2-pin DIP switch
Connector location: SW1

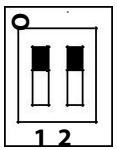


SW1-1	SW1-2	Settings
OFF	ON	CCFL Mode
ON	OFF	PWM Mode

Pin	Definition	Pin	Definition
1	PWM_dimming	2	CCFL_dimming
3	PL_BKLTCTRL	4	PL_BKLTCTRL

LVDS Resolution Select

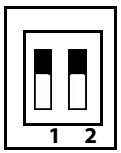
Connector type: 2-pin DIP switch
Connector location: SW5



SW5-1	SW5-2	Resolution
OFF	OFF	1024 x 768
ON	OFF	1280 x 1024
OFF	ON	1366 x 768
ON	ON	1920 x 1080

PWN Reverse/Function Key Dimming Select

Connector type: 4-pin DIP switch
Connector location: SW6



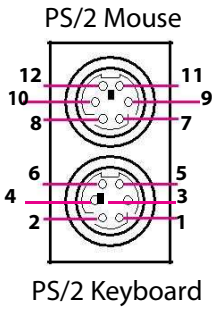
SW6-1	SW6-2	SW6-3	SW6-4	Settings
ON	OFF	X	X	PWN Dimming
OFF	ON	X	X	PWN Dimming Reverse
X	X	ON	OFF	ETOP-IPC Dimming
X	X	OFF	ON	MPPC Dimming

Connector Pin Definitions

External I/O Interfaces

Keyboard/Mouse Ports

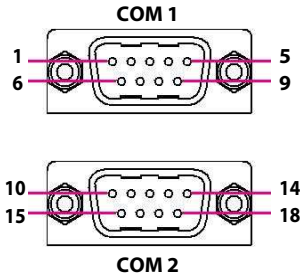
Connector type: PS/2, Mini-DIN6
Connector location: KM1



Pin	Definition	Pin	Definition
1	KDAT	2	NC
3	GND	4	5VSB
5	KCLK	6	NC
7	MDAT	8	NC
9	GND	10	5VSB
11	MCLK	12	NC

COM 1 and COM 2 Ports

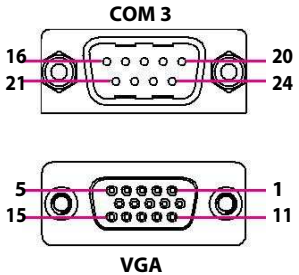
Connector type: DB-9 port, 9-pin D-Sub
Connector location: CN6A (COM1) and CN6B (COM2)



Pin	Definition	Pin	Definition
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	DCD2
11	RXD2	12	TXD2
13	DTR2	14	GND
15	DSR2	16	RTS2
17	CTS2	18	RI2

COM 3 and VGA Port

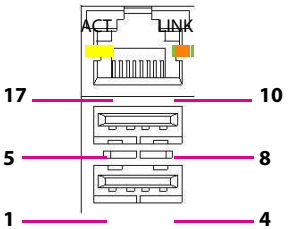
Connector type: DB-9 port, 9-pin D-Sub (COM)
DB-15 port, 15-pin D-Sub (VGA)
Connector location: CN7A (COM3) and CN7B (VGA)



Pin	Definition	Pin	Definition
1	RED_VGA	2	GREEN_VGA
3	BLUE_VGA	4	NC
5	GND	6	VGADET
7	GND	8	GND
9	VCC5	10	NC
11	NC	12	DDCDATA_VGA
13	HSYNC_VGA	14	VSYNC_VGA
15	DDCCLK_VGA	16	DCD3
17	RXD3	18	TXD3
19	DTR3	20	GND
21	DSR3	22	RTS3
23	CTS3	24	RI3

LAN 1 and USB Ports

Connector type: RJ45 port with LEDs
Dual USB 2.0 ports, Type A
Connector location: CON1A (USB0/1) and CON1B (LAN1)



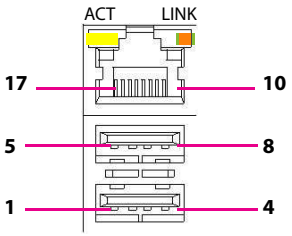
Act	Status
Flashing Yellow	Data activity
Off	No activity

Link	Status
Steady Green	1G network link
Steady Orange	100Mbps network link
Off	No link

Pin	Definition	Pin	Definition
1	5VSB	2	USB_0N
3	USB_0P	4	GND
5	5VSB	6	USB_1N
7	USB_1P	8	GND
9	V25_LAN1	10	LAN1_MDI0P
11	LAN1_MDI0N	12	LAN1_MDI1P
13	LAN1_MDI1N	14	LAN1_MDI2P
15	LAN1_MDI2N	16	LAN1_MDI3P
17	LAN1_MDI3N	18	GND
19	LAN1_LED3P	20	LAN1_LED2P
21	LAN1_ACTLED#	22	LAN1_LED1P

LAN 2 and USB Ports

Connector type: RJ45 port with LEDs
Dual USB 2.0 ports, Type A
Connector location: CON2A (USB0/1) and CON2B (LAN2)



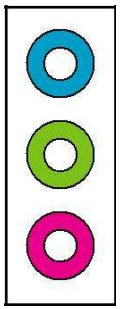
Act	Status
Flashing Yellow	Data activity
Off	No activity

Link	Status
Steady Green	1G network link
Steady Orange	100Mbps network link
Off	No link

Pin	Definition	Pin	Definition
1	5VSB	2	USB_2N
3	USB_2P	4	GND
5	5VSB	6	HUBUSB_DN3
7	HUBUSB_DP3	8	GND
9	LAN2P1V9	10	LAN2_MDI0P
11	LAN2_MDI0N	12	LAN2_MDI1P
13	LAN2_MDI1N	14	LAN2_MDI2P
15	LAN2_MDI2N	16	LAN2_MDI3P
17	LAN2_MDI3N	18	GND
19	LAN2_LED3P	20	LAN2_LED2P
21	LAN2_ACTLED#	22	LAN2_LED1P

Audio Connectors

Connector type: 3.5mm Earphone Jack
Connector location: U42A (MIC), U42B (Line-out) and U42C (Line-in)



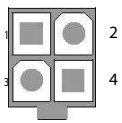
Pin	Definition	Pin	Definition
1	GND	2	MIC1-L
3	MIC-JD	4	GND
5	MIC1_R3	22	LINE_OUT_L
23	FRONT-JD	24	GND
25	LINE_OUT_R	32	LINE1-L
33	LINE1-JD	34	GND
35	LINE1-R		

Connector Pin Definitions

Internal Connectors

PoE Power Connector

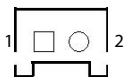
Connector type: 2x2 4-pin connector, 4.2mm pitch Connector location: PWR1



Pin	Definition	Pin	Definition
1	GND	2	GND
3	VIN	4	VIN

Power Button

Connector type: 1x2 JST, 2-pin header, 2.0mm pitch Connector location: J2



Pin	Definition
1	PWRBTN#
2	GND

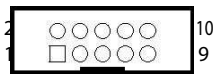
DC Power Button (AT)

Connector type: 1x2 2-pin header, 2.54mm pitch Connector location: J3

Pin	Definition
1	AT_IN
2	VIN_M

COM 4

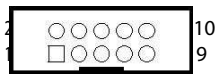
Connector type: 2x5 10-pin header, 2.0mm pitch Connector location: CN16



Pin	Definition	Pin	Definition
1	DCD4	2	RXD4
3	TXD4	4	DTR4
5	GND	6	DSR4
7	RTS4	8	CTS4
9	RI4	10	GND

COM 5

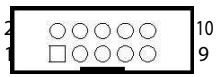
Connector type: 2x5 10-pin header, 2.0mm pitch Connector location: CN15



Pin	Definition	Pin	Definition
1	DCD5	2	RXD5
3	TXD5	4	DTR5
5	GND	6	DSR5
7	RTS5	8	CTS5
9	RI5	10	GND

COM 6

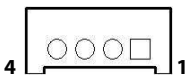
Connector type: 2x5 10-pin header, 2.0mm pitch Connector location: CN14



Pin	Definition	Pin	Definition
1	DCD6	2	RXD6
3	TXD6	4	DTR6
5	GND	6	DSR6
7	RTS6	8	CTS6
9	RI6	10	GND

USB Connectors

Connector type: 1x4 4-pin header JST, 2.0mm pitch Connector location: J9 & J10



Pin	Definition	Pin	Definition
1	5VSB	2	HUBUSB_DN1
3	HUBUSB_DP1	4	GND

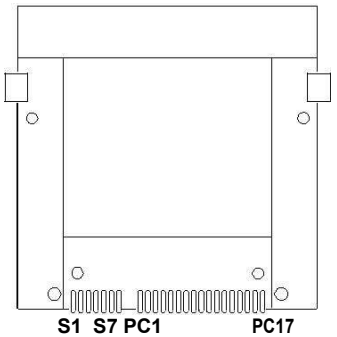
Speaker-out Connector

Connector type: 1x4 4-pin header, 2.0mm pitch Connector location: JP11

Pin	Definition	Pin	Definition
1	AUDIO-OUT-LR+	2	AUDIO-OUT-LR-
3	AUDIO-OUT-RR+	4	AUDIO-OUT-RR-

CFast Card Slot

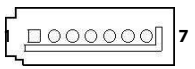
Connector type: Standard CFast connector Connector location: CN5



Pin	Definition	Pin	Definition
S1	GND	PC6	NC
S2	SATA_TXP2	PC7	GND
S3	SATA_TXN2	PC8	TEST POINT
S4	GND	PC9	NC
S5	SATA_RXN2	PC10	NC
S6	SATA_RXP2	PC11	NC
S7	GND	PC12	NC
PC1	GND	PC13	+3.3V
PC2	GND	PC14	+3.3V
PC3	NC	PC15	GND
PC4	NC	PC16	GND
PC5	NC	PC17	NC

SATA Connector

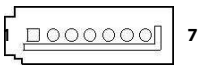
Connector type: Standard Serial ATA, 1.27mm pitch Connector location: CN8



Pin	Definition	Pin	Definition
1	GND	2	SATA_TXP0
3	SATA_TXN0	4	GND
5	SATA_RXN0	6	SATA_RXP0
7	GND		

SATA Connector

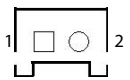
Connector type: Standard Serial ATA, 1.27mm pitch Connector location: CN13



Pin	Definition	Pin	Definition
1	GND	2	SATA_TXP1
3	SATA_TXN1	4	GND
5	SATA_RXN1	6	SATA_RXP1
7	GND		

SATA Power Connector

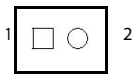
Connector type: 1x2 JST, 2-pin header, 2.5mm pitch Connector location: J11



Pin	Definition
1	VCC5
2	GND

SATA Power Connector

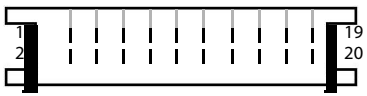
Connector type: 1x2 JST, 2-pin header, 2.5mm pitch Connector location: J13



Pin	Definition
1	VCC5
2	GND

LVDS Connector A

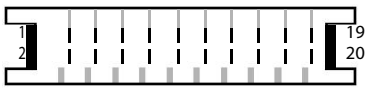
Connector type: 2x10 20-pin header, 1.25mm pitch Connector location: CN3



Pin	Definition	Pin	Definition
1	LVDS_DDC_CLK	2	LVDS_DDC_DATA
3	Panel_VDD	4	LVDSA_DATA0
5	LVDSA_DATA3	6	LVDSA_DATA#0
7	LVDSA_DATA#3	8	Panel_VDD
9	GND	10	LVDSA_DATA1
11	LVDSA_CLK	12	LVDSA_DATA#1
13	LVDSA_CLK#	14	GND
15	GND	16	Panel_backlight
17	LVDSA_DATA2	18	Panel_backlight
19	LVDSA_DATA#2	20	GND

LVDS Connector B

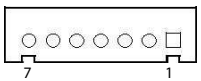
Connector type: 2x10 20-pin header, 1.25mm pitch Connector location: CN4



Pin	Definition	Pin	Definition
1	LVDS_DDC_CLK	2	LVDS_DDC_DATA
3	Panel_VDD	4	LVDSB_DATA0
5	LVDSB_DATA3	6	LVDSB_DATA#0
7	LVDSB_DATA#3	8	Panel_VDD
9	GND	10	LVDSB_DATA1
11	LVDSB_CLK	12	LVDSB_DATA#1
13	LVDSB_CLK#	14	GND
15	GND	16	Panel_backlight
17	LVDSB_DATA2	18	Panel_backlight
19	LVDSB_DATA#2	20	GND

LVDS Panel Inverter Connector

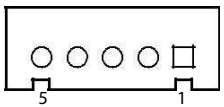
Connector type: 1x7 JST, 7-pin header, 2.5mm pitch Connector location: J5



Pin	Definition	Pin	Definition
1	VCC5	2	+12V
3	+12V	4	Panel Backlight Brightness Control
5	GND	6	GND
7	Panel Backlight Enable		

Touch Panel Control Connector

Connector type: 1x5 5-pin header JST, 2.54mm pitch Connector location: J6

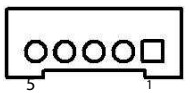


Pin	4-wire	5-wire
1	Left	LL (L)
2	Top	UL (Y)
3	N/A	Sense (S)
4	Right	LR (X)
5	Bottom	UR (H)

Pin	Definition	Pin	Definition
1	TOUCH_YD	2	TOUCH_XR
3	SENSE	4	TOUCH_YU
5	TOUCH_XL		

SATA/Power LED

Connector type: 1x5 5-pin header JST, 2.0mm pitch Connector location: J1



Pin	Definition	Pin	Definition
1	HDDLED#	2	HDDLED
3	GND	4	STBYLED
5	PWRLED		

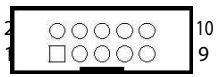
MCU Debug I/F

Connector type: 1x4 4-pin header, 2.54mm pitch Connector location: JP1

Pin	Definition	Pin	Definition
1	VCC3	2	MCU_SBWTCK
3	MCU_SBWTDIO	4	GND

MCU LED Indicator Connector

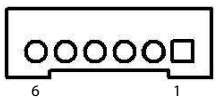
Connector type: 2x5 10-pin header, 2.0mm pitch Connector location: CN1



Pin	Definition	Pin	Definition
1	MCU_LSENPW	2	MCU_LED_5
3	MCU_LSEN	4	MCU_LED_4
5	MCU_PIRC	6	MCU_LED_3
7	MCU_BKC	8	MCU_LED_2
9	GND	10	MCU_LED_1

Function Key-in Connector

Connector type: 1x6 6-pin header JST, 2.0mm pitch Connector location: J4



Pin	Definition	Pin	Definition
1	MCU_KEYIN_1	2	MCU_SCAN_1
3	MCU_SCAN_2	4	MCU_SCAN_3
5	MCU_SCAN_4	6	MCU_SCAN_5

System FAN2 Connector

Connector type: 1x4 4-pin Wafer, 2.54mm pitch Connector location: CN19

Pin	Definition	Pin	Definition
1	GND	2	12V
3	FANIN	4	FANOUT

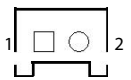
System FAN1 Connector

Connector type: 1x4 4-pin Wafer, 2.54mm pitch Connector location: CN18

Pin	Definition	Pin	Definition
1	GND	2	12V
3	SYSFANIN	4	SYSFANOUT

Power Button

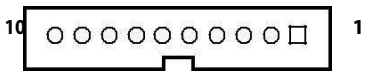
Connector type: 1x2 JST, 2-pin header, 2.0mm pitch Connector location: J7



Pin	Definition
1	HW_R_RST#
2	GND

Bluetooth Connector

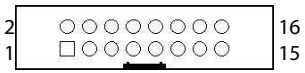
Connector type: 1x10 10-pin header JST, 1.0mm pitch Connector location: J8



Pin	Definition	Pin	Definition
1	GND	2	USB_6P
3	USB_6N	4	NC
5	NC	6	BT_AUDIO_EN
7	NC	8	BT_3.3V
9	NC	10	GND

Digital I/O

Connector type: 2x8 16-pin header, 2.54mm pitch Connector location: CN17



Pin	Definition	Pin	Definition
1	DI0	2	DO0
3	DI1	4	DO1
5	DI2	6	DO2
7	DI3	8	DO3
9	NC	10	NC
11	COM1	12	NC
13	GND	14	GND
15	GND	16	GND

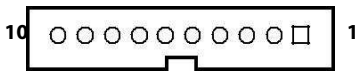
GPIO

Connector type: 2x5 10-pin header, 2.0mm pitch Connector location: JP15

Pin	Definition	Pin	Definition
1	VCC5	2	GND
3	ICH_GPO0_OUT	4	ICH_GPI0_IN
5	ICH_GPO1_OUT	6	ICH_GPI1_IN
7	ICH_GPO2_OUT	8	ICH_GPI2_IN
9	ICH_GPO3_OUT	10	ICH_GPI3_IN

Bluetooth Connector

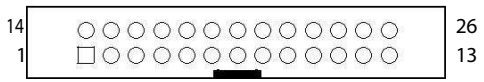
Connector type: 1x10 10-pin header JST, 1.0mm pitch Connector location: JDB1



Pin	Definition	Pin	Definition
1	GND	2	SIO_RESET#
3	LPC_PORT80_CLK	4	LPC_FRAME#
5	LPC_AD3	6	LPC_AD2
7	LPC_AD1	8	LPC_AD0
9	VCC3	10	VCC3

Parallel Port Box Header

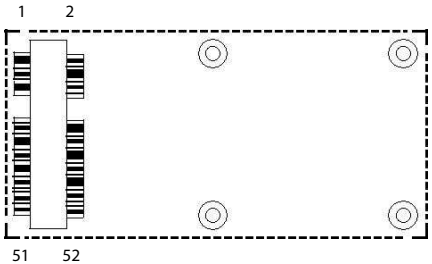
Connector type: 2x13 26-pin header, 2.0mm pitch
Connector location: CN12



Pin	Definition	Pin	Definition
1	Line Print Strobe	2	Parallel Data 0
3	Parallel Data 1	4	Parallel Data 2
5	Parallel Data 3	6	Parallel Data 4
7	Parallel Data 5	8	Parallel Data 6
9	Parallel Data 7	10	Acknowledge#
11	Busy	12	Paper empty
13	Select	14	Auto Feed#
15	Error#	16	Initialize#
17	Select Input#	18	GND
19	GND	20	GND
21	GND	22	GND
23	GND	24	GND
25	GND	26	NC

Mini-PCIe Connector

Connector location: CN10

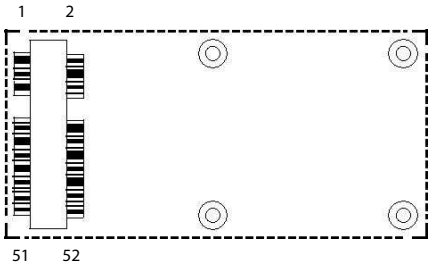


Pin	Definition	Pin	Definition
1	WAKE#	2	+3VSB
3	NC	4	GND
5	NC	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	REF CLK-	12	UIM_CLK
13	REF CLK+	14	UIM_RESET
15	GND	16	UIM_VPP
17	NC	18	GND
19	NC	20	Disable#
21	GND	22	PERST#
23	PCIERX1N	24	+3VSB
25	PCIERX1P	26	GND

Pin	Definition	Pin	Definition
27	GND	28	+1.5V
29	GND	30	SMBCLK
31	PCIETX-	32	SMBDATA
33	PCIETX+	34	GND
35	GND	36	USB_5N
37	GND	38	USB_5P
39	+3VSB	40	GND
41	+3VSB	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	NC	52	+3VSB

Mini-PCIe Connector

Connector location: CN11



Pin	Definition	Pin	Definition
1	WAKE#	2	+3VSB
3	NC	4	GND
5	NC	6	+1.5V
7	CLKREQ#	8	UIM_PWR
9	GND	10	UIM_DATA
11	REF CLK-	12	UIM_CLK
13	REF CLK+	14	UIM_RESET
15	GND	16	UIM_VPP
17	NC	18	GND
19	NC	20	Disable#
21	GND	22	PERST#
23	PCIERX1N	24	+3VSB
25	PCIERX1P	26	GND

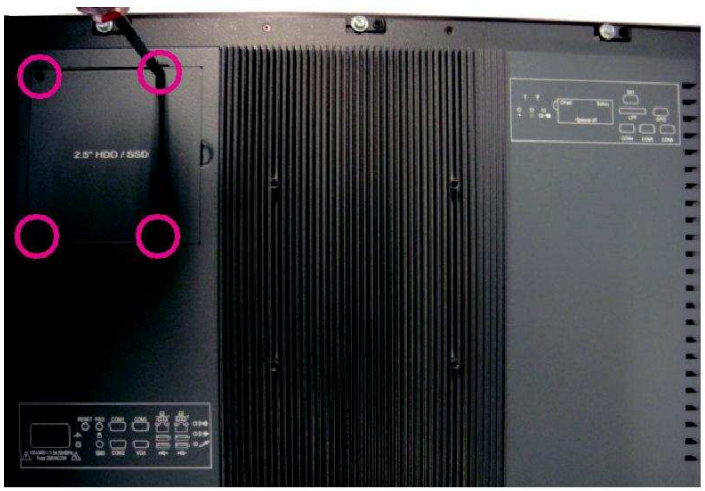
Pin	Definition	Pin	Definition
27	GND	28	+1.5V
29	GND	30	SMBCLK
31	PCIETX-	32	SMBDATA
33	PCIETX+	34	GND
35	GND	36	USB_5N
37	GND	38	USB_5P
39	+3VSB	40	GND
41	+3VSB	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	+1.5V
49	NC	50	GND
51	NC	52	+3VSB

Chapter 3: System Setup

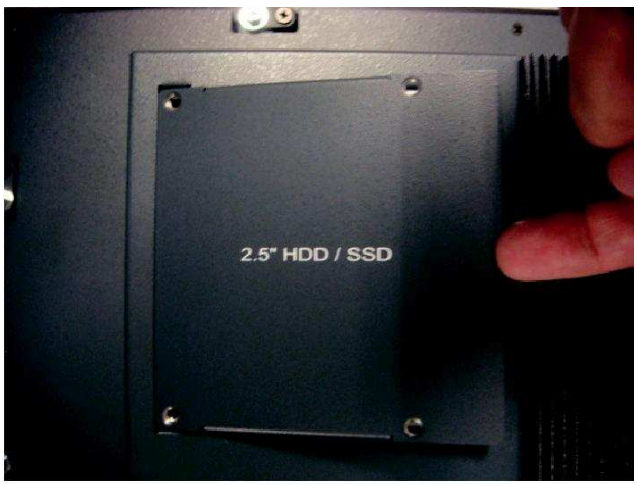
Installing a Primary SATA Hard Drive

Prior to removing the chassis cover, make sure the unit's power is off and disconnected from the power sources to prevent electric shock or system damage.

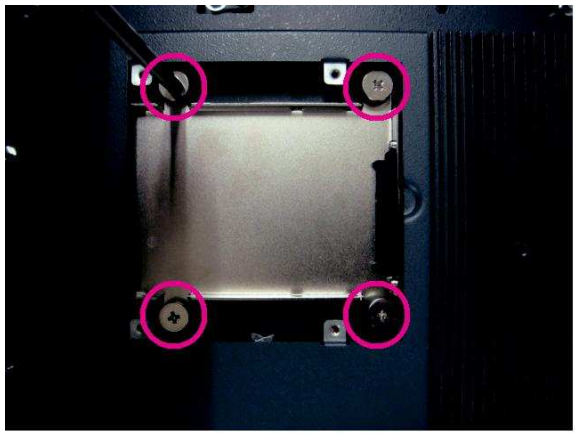
1. Remove the 4 screws around the HDD cover.



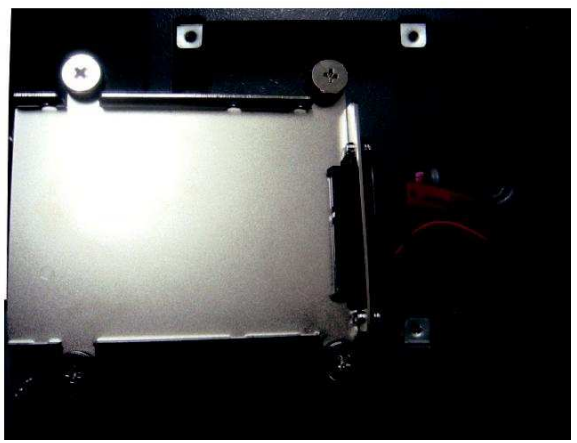
2. Remove the HDD cover.



3. Remove the mounting screws on the drive bay.

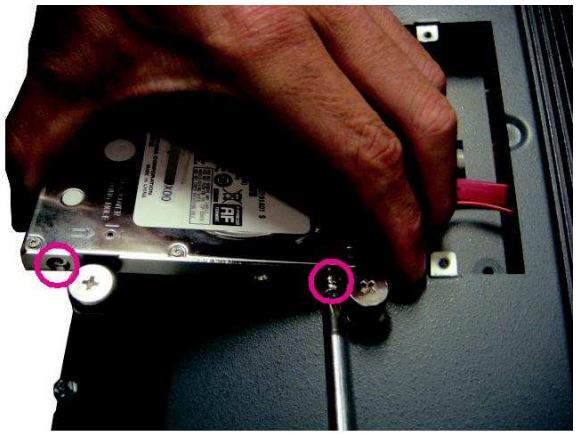


4. Push toward right and pull up the drive bay.



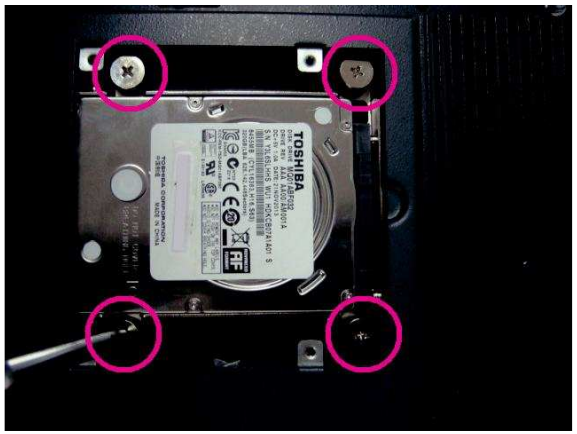
5. Place the SATA hard drive on the drive bay.

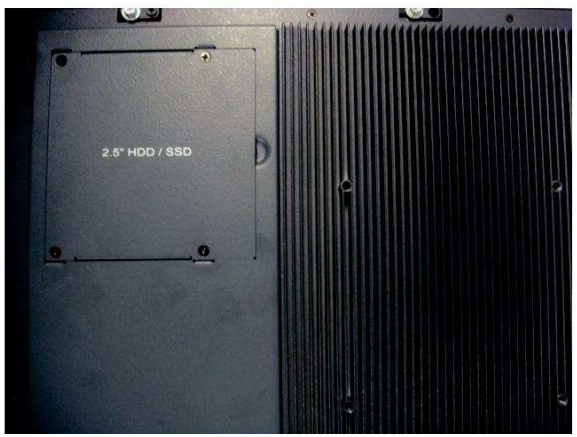
6. Use the provided mounting screws to secure the drive in place.



7. Push toward right then push down the drive bay into the chassis.

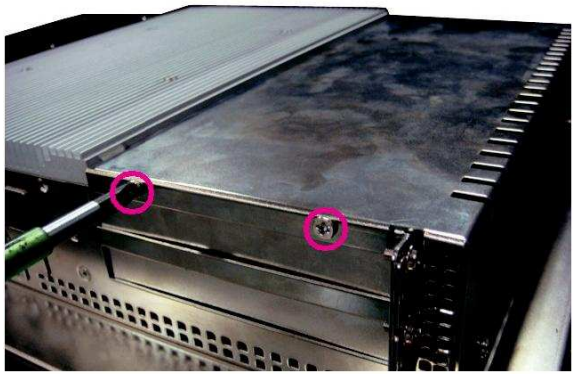
8. Secure the drive bay in the chassis and secure the HDD cover.

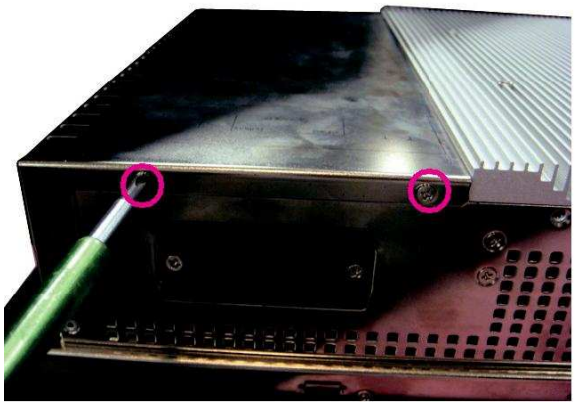




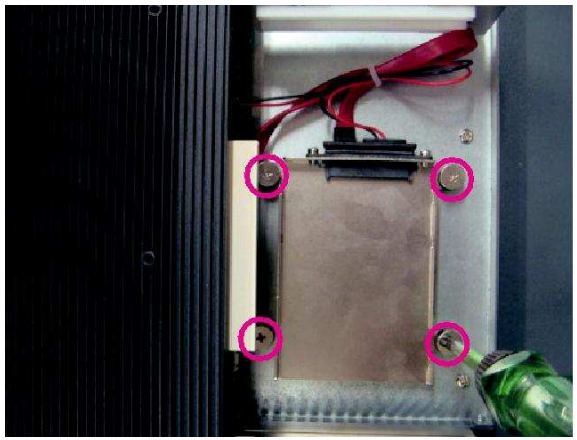
Installing a Secondary SATA Hard Drive

1. Remove the 6 screws on the right back cover.

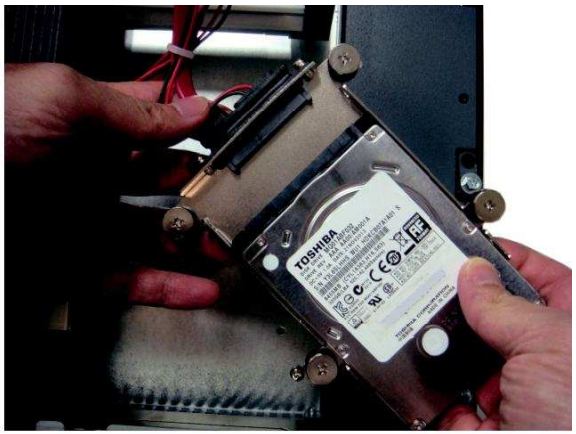




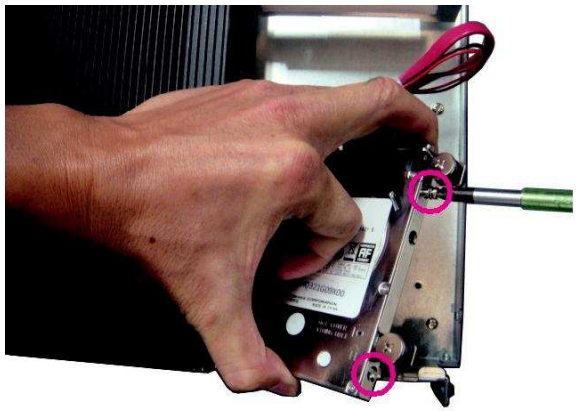
2. Remove the mounting screws on the drive bay.



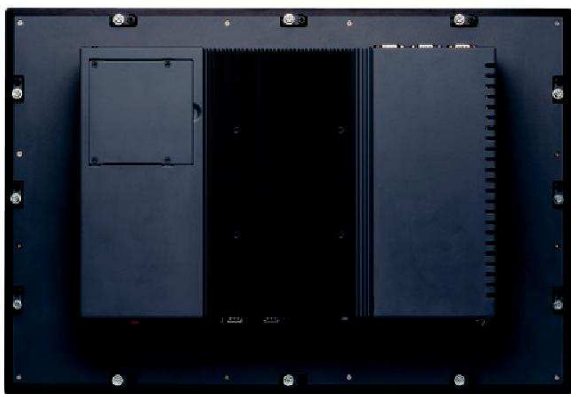
3. Place the SATA hard drive on the drive bay.



4. Use the provided mounting screws to secure the drive in place.

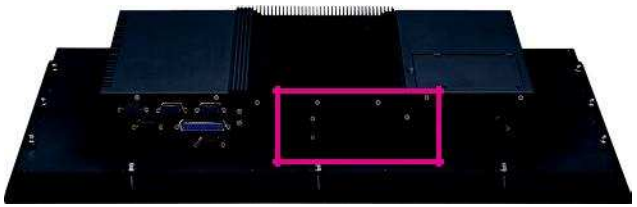


5. Secure the drive bay in the chassis and replace the right back cover.

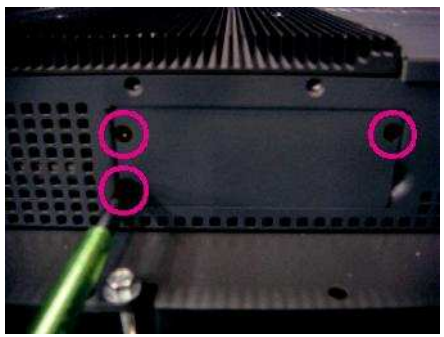


Installing a CFast Card

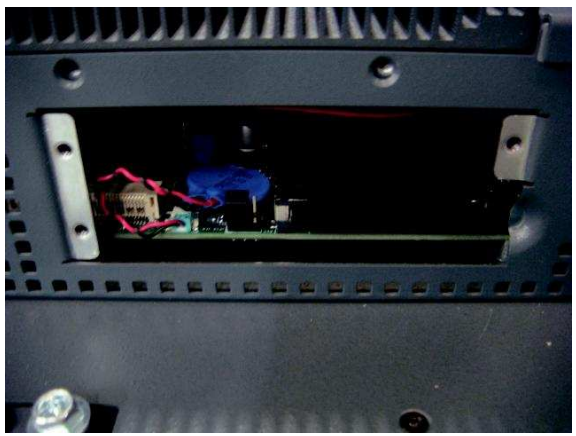
1. The CFast card is located on the rear top side of the chassis.
   Remove this cover to install CFast card and change battery.
   Change this cover to support other interface connector, such as fieldbus.



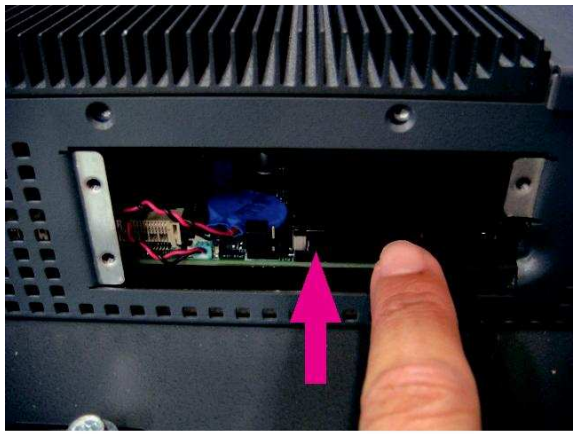
2. Remove the mounting screw on the cover.



3. Insert the CFast card until it is completely seated in the socket.



4. Push the CFast card to remove it.



Installing a Mini-PCIe Module

The Mini-PCIe module package includes the following items:
RALINK 802.11b/g/n 2T2R wireless mini card module kit QCOM: Q802XKN5F

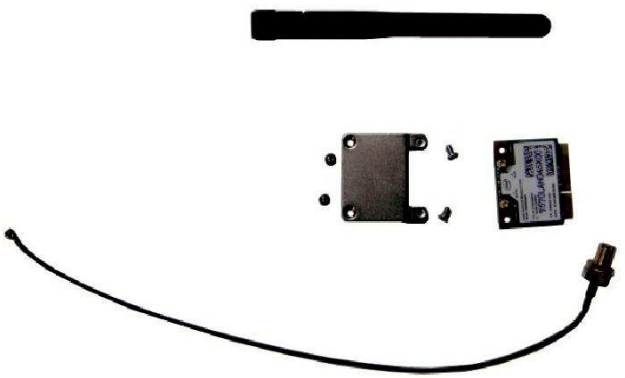
Mini-PCIe Module

RF-Cable

Antenna

3.5G module kit Sierra Wireless MC8705

802.11b/g/n wireless mini card module kit INTEL:2200BNHMW



Mini PCIe Card	Connection Cable	Connector Board	
		Dual RJ45	PROFINET EtherNet/IP EtherCAT
		DB9	PROFIBUS
		5-pin Connector	DeviceNet

Universal PROFIBUS I/O Bracket

eTOP-IPCxx60 Series Special PROFIBUS I/O Bracket

Universal DeviceNet I/O Bracket

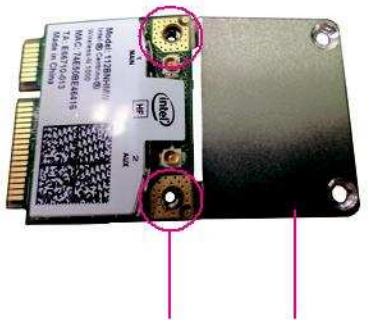
eTOP-IPCxx60 Series Special DeviceNet I/O Bracket

Universal PROFINET, EtherNET/IP and EtherCAT I/O Bracket

eTOP-IPCxx60 Series Special PROFINET, EtherNET/IP and EtherCAT I/O Bracket

If you are installing the 802.11b/g/n INTEL: 2200BNHMW mini card module (half size), before processing with the installation, please assemble the Wi-Fi module bracket first to full size module by following the instructions below:

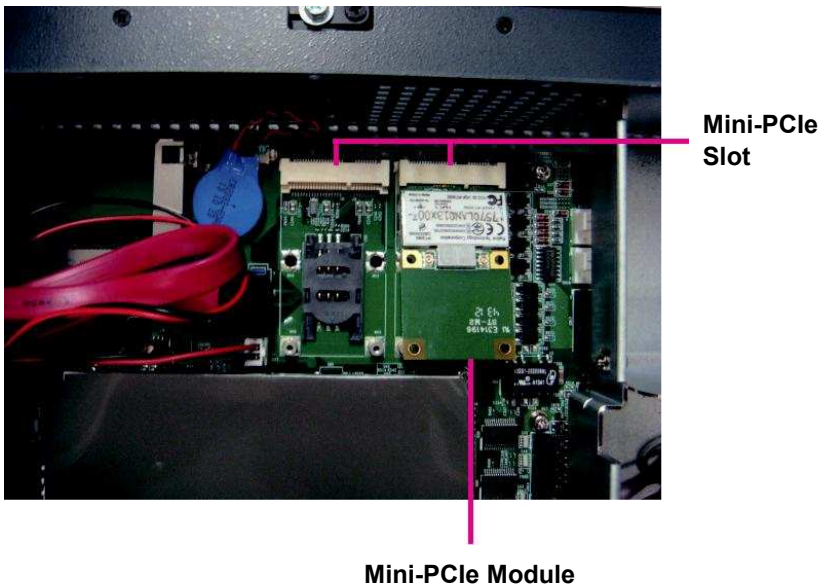
1. Align the mounting holes on the Wi-Fi mini card module to the mounting holes on the Wi-Fi module bracket.



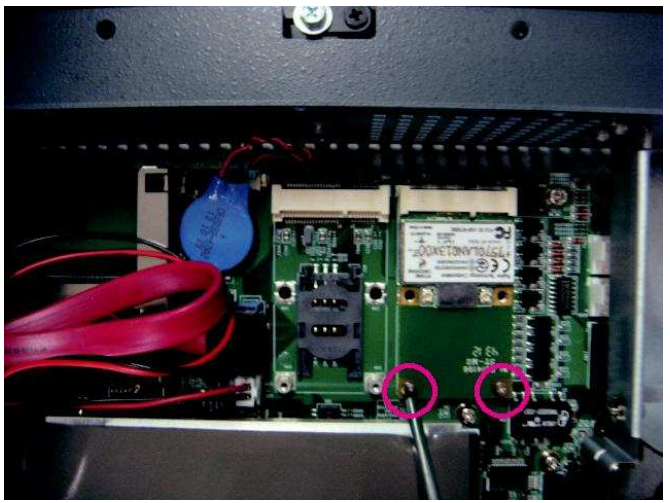
Mounting holes **Wi-Fi module bracket**

2. Tighten screws onto the mounting holes to secure the bracket.

3. Insert the Mini-PCIe module into the Mini-PCIe slot at the 45 degrees angle until the gold-plated connector on the edge of the module completely disappear inside the slot.

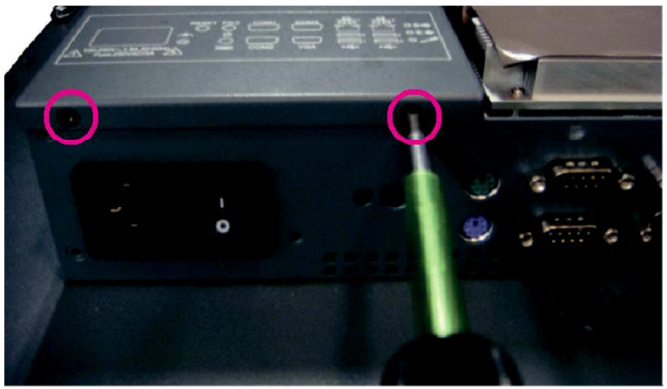


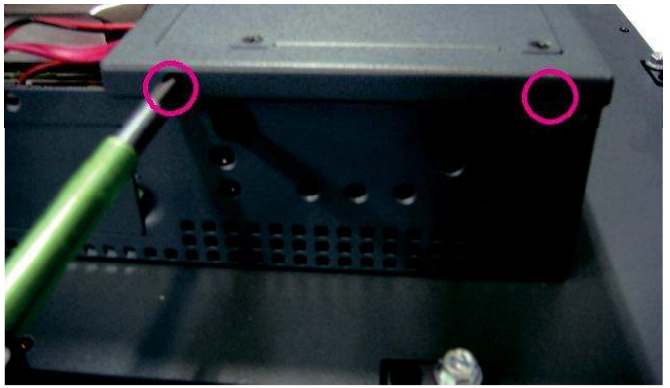
4. Secure the module with mounting screws.

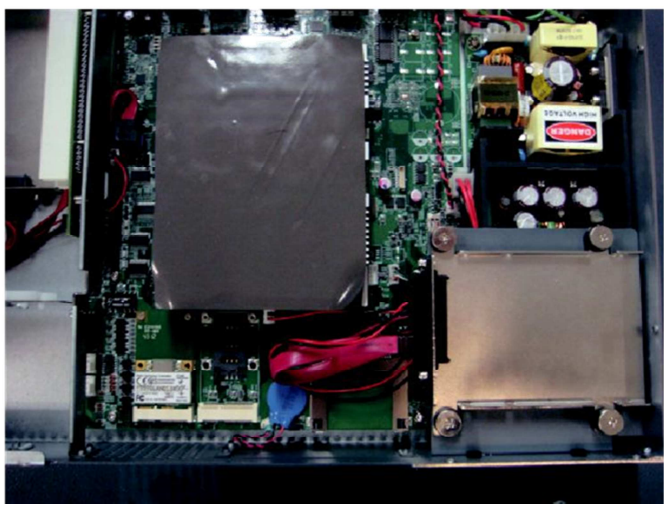


5. Wi-Fi or 3G Mini-PCIe module:

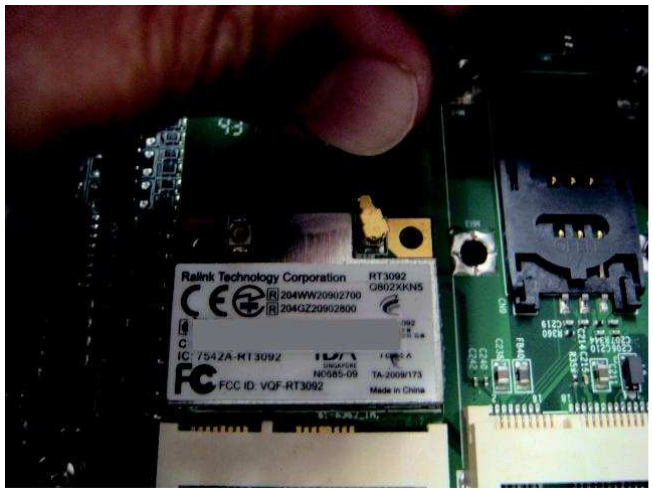
A. Remove the left back cover.



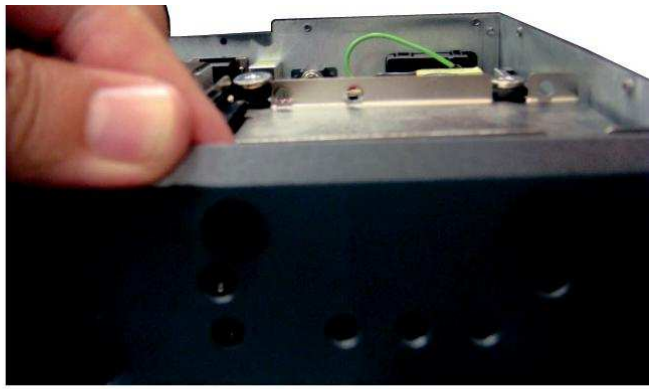


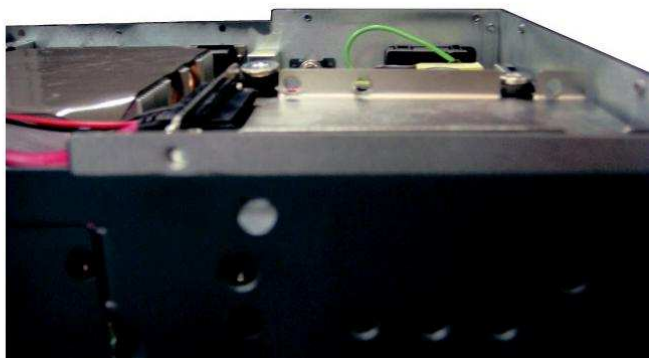


B. Attach one end of the RF cables onto the module.

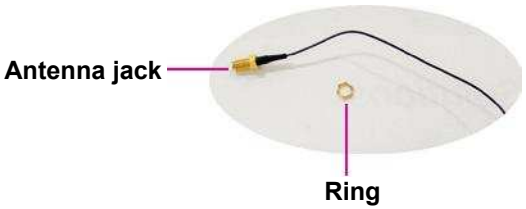


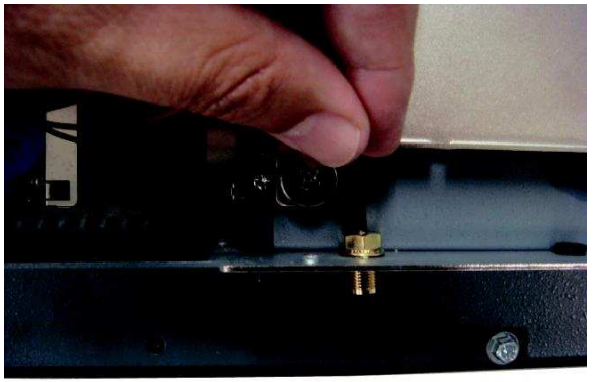
C. Remove the antenna hole block.

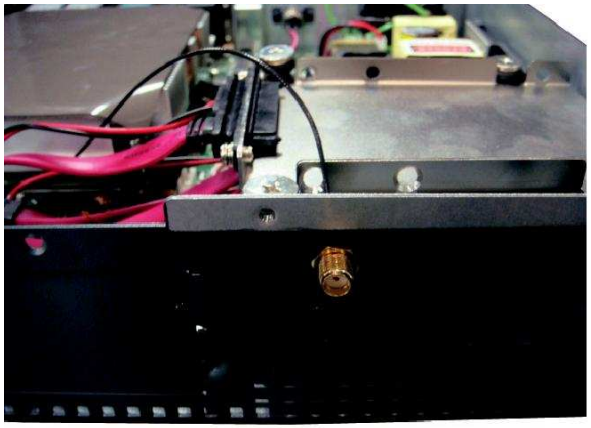




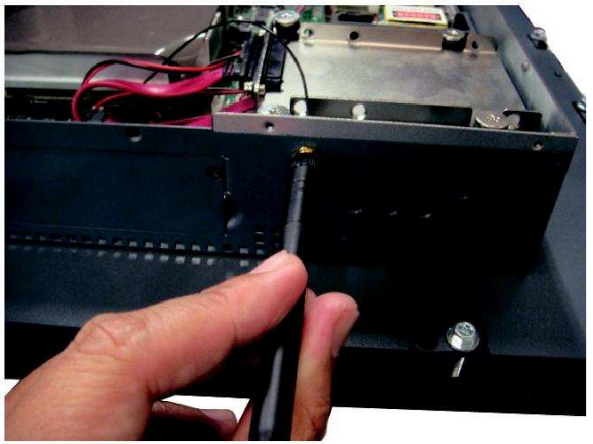
D. Insert the ring onto the antenna jack end of the cable.



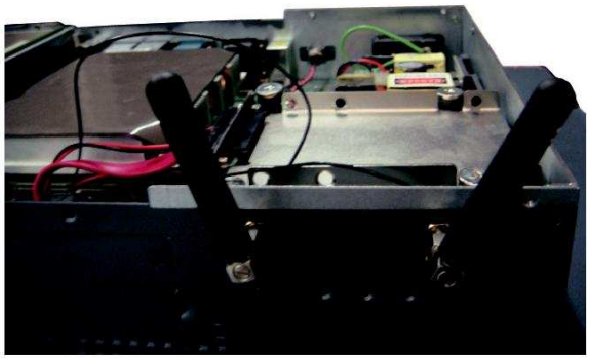


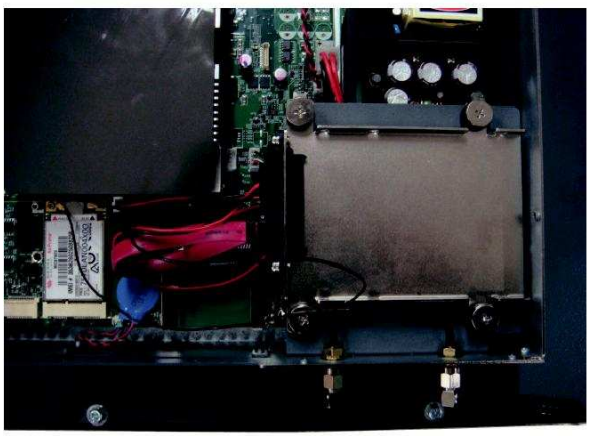


E. Connect external antennas to the antenna jacks.



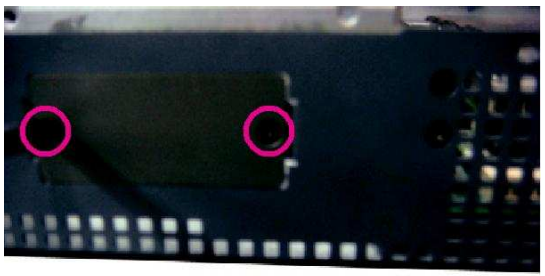
F. 3G Mini-PCIe module.

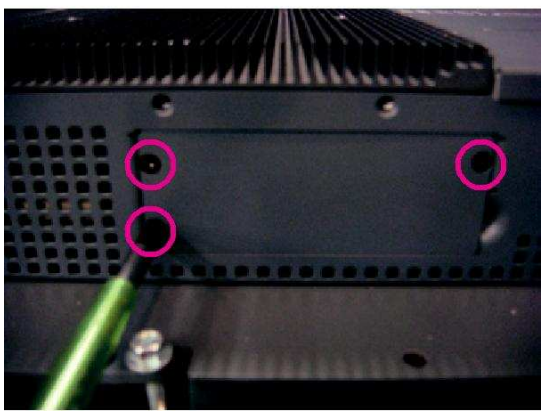




6. Fieldbus Mini-PCIe module.

A. Remove the Universal Fieldbus I/O cover or the Optional I/F cover.

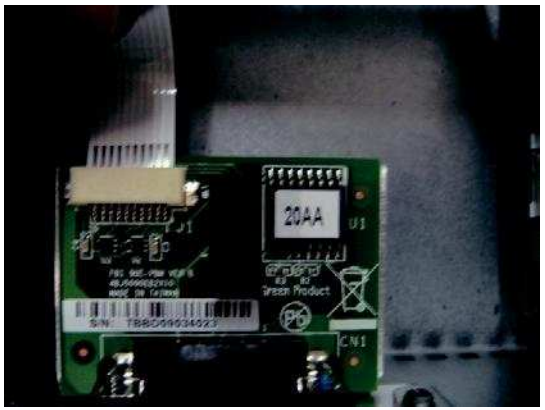




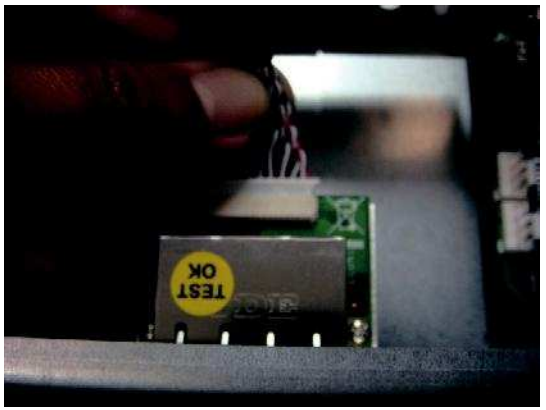
B. Secure the Universal FBI I/O bracket or the Special FBI I/O bracket.

C. Plug the FBI Cable to the I/O connector board.

DB9 Connector Board

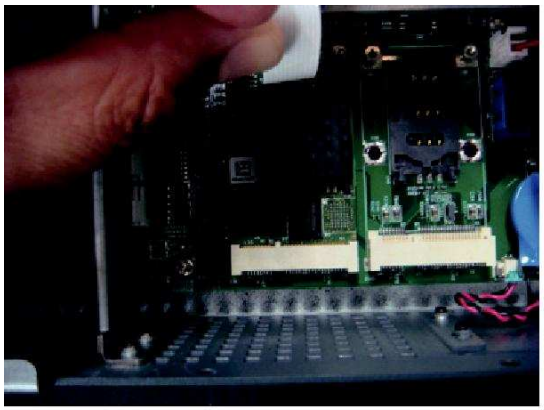


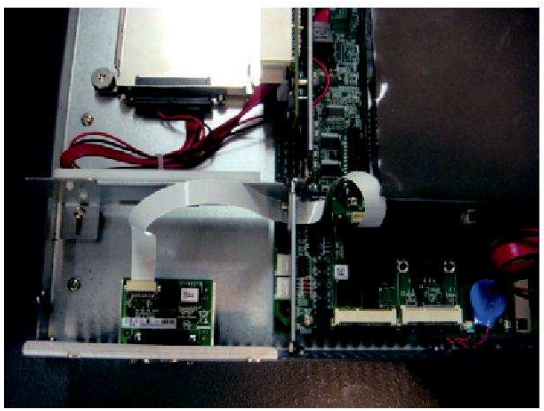
Dual RJ45 Connector Board

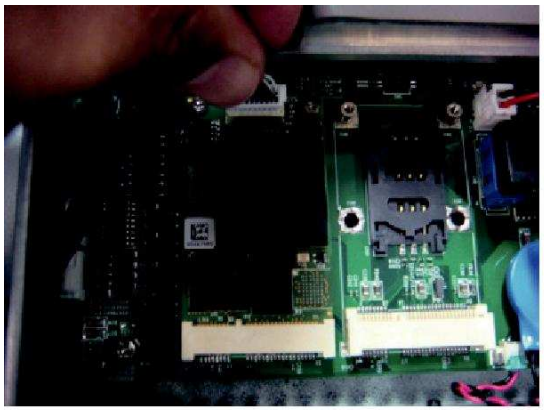


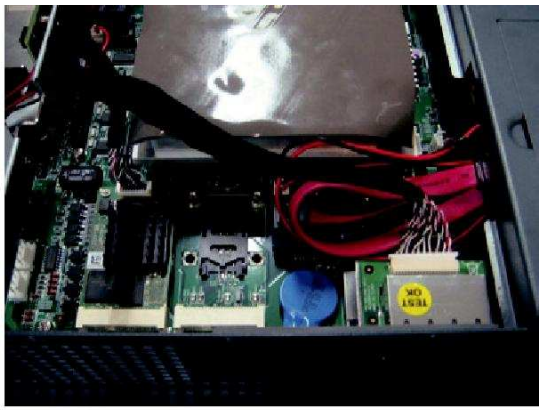
5-pins Connector Board

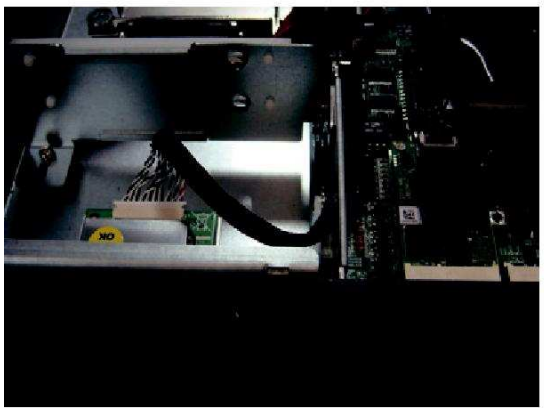
D. Plug the FBI Cable to the FBI Mini-PCIe card.



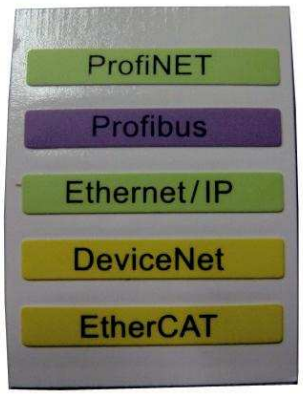


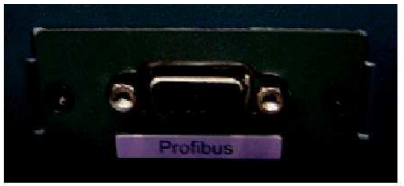






E. Stick the FBI protocol labels to the corresponding interfaces.



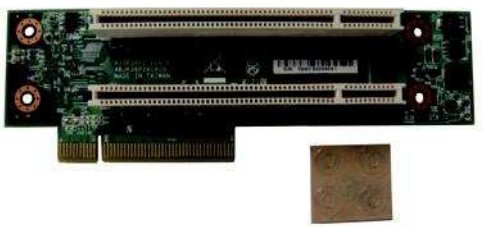


Installing a Riser Card

The riser card package includes the following items:

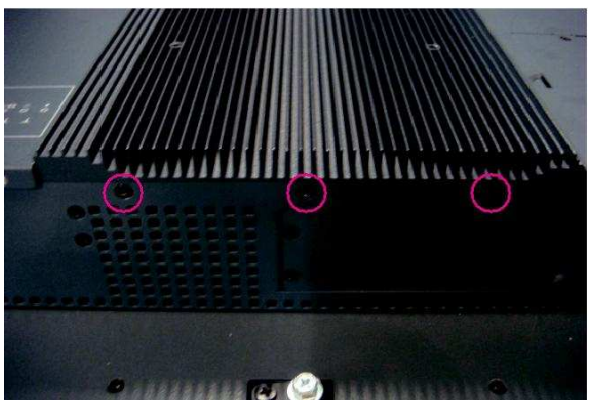
1 PCI and 1 PCIe x4 (Default Installation)

2 PCI riser card



2 PCIe x4 riser card

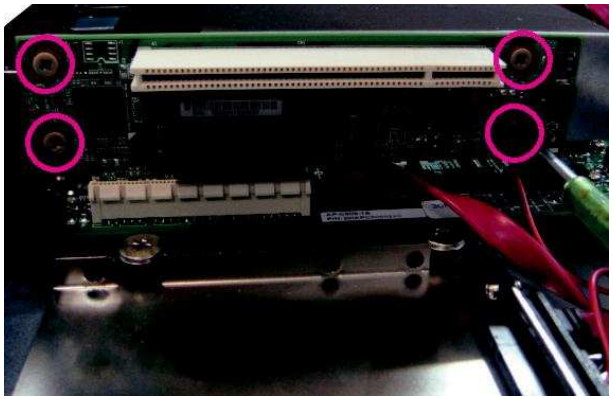
1. Remove the 6 screws on the back heatsink cover.



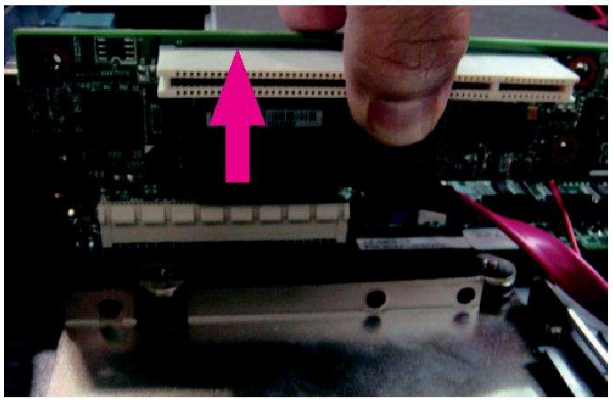
2. Remove the back heatsink cover.

3. Remove the right back cover.

4. Remove the 4 plastic screws.

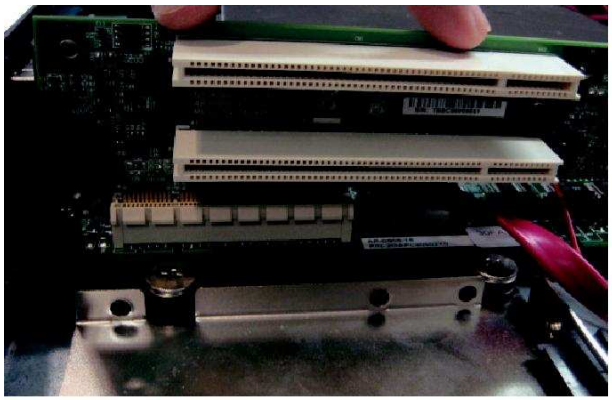


5. Pull up to remove the riser card.

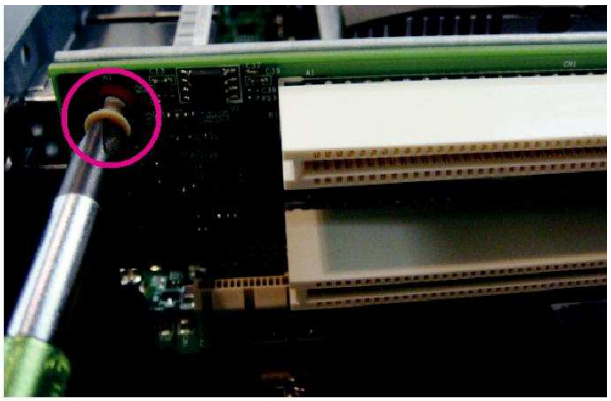


6. Attach the insulation pads to the holes on the riser card.

7. Plug in the 2 PCI riser card.



8. Use the plastic screws to secure the riser card.

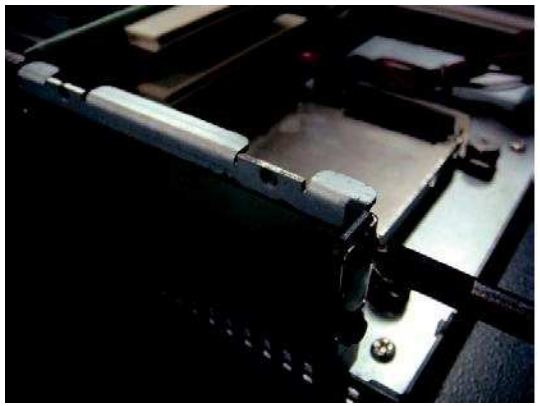


NOTE:

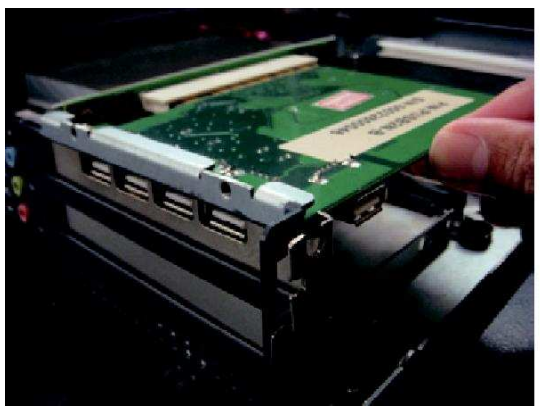
- Do not overtighten the plastic to prevent damaging the plastic screws.
- The plastic screw and insulation pads support GPE (ground protection earth) which means signal ground and chassis ground (earth ground) are separated.

Installing a PCI Card

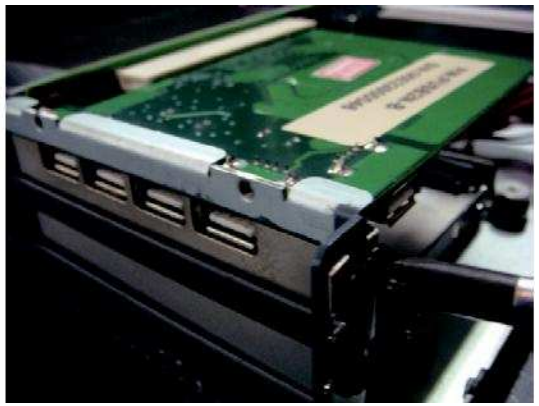
1. Remove the PCI bracket.



2. Plug in the PCI card.

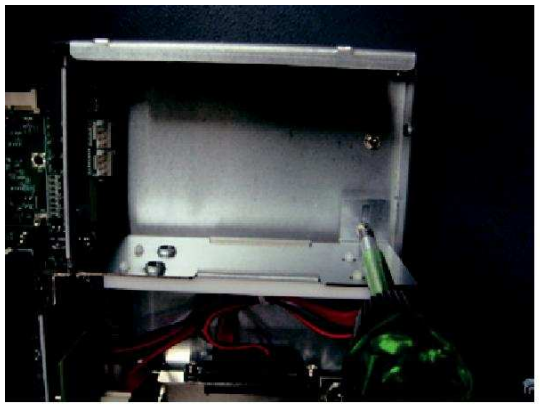


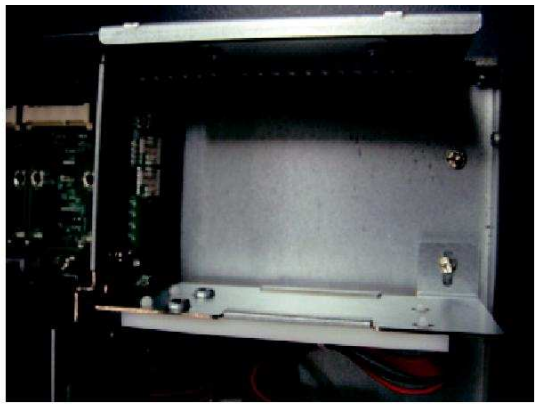
3. Secure the PCI card.

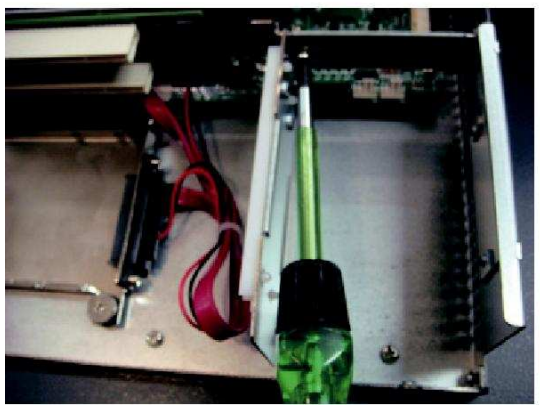


4. The PCI card bracket supports card length from 170.25 to 179.75mm. It protects the PCI card from vibration.

   Move the PCI card bracket to fix the PCI card.

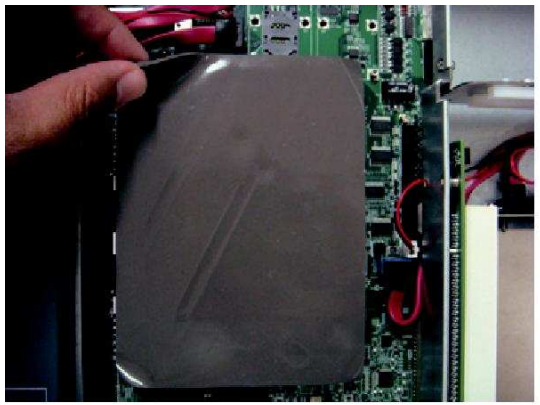




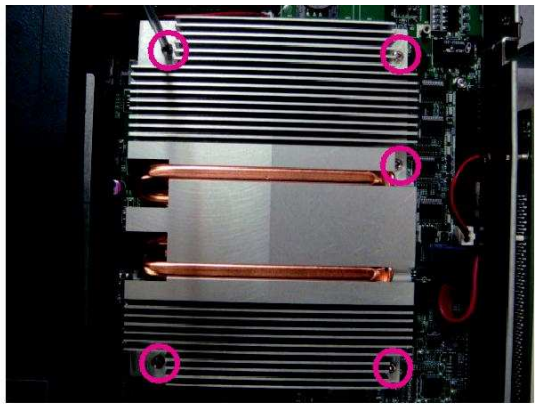


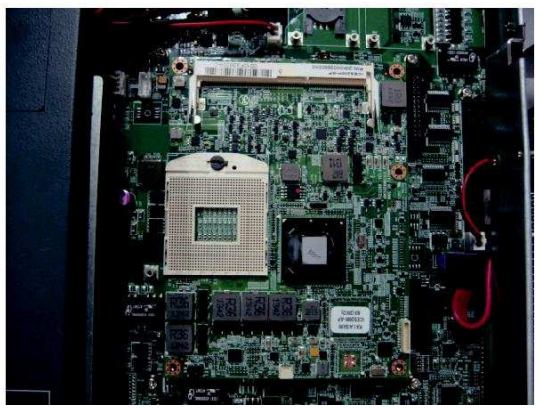
Installing a CPU and SO-DIMM

1. Remove the thermal pad on the CPU heatsink.

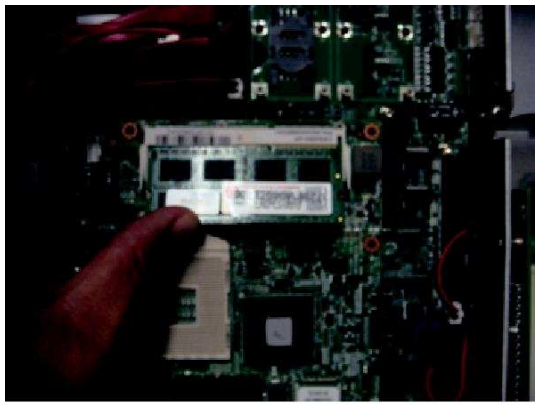


2. Remove the CPU heatsink.

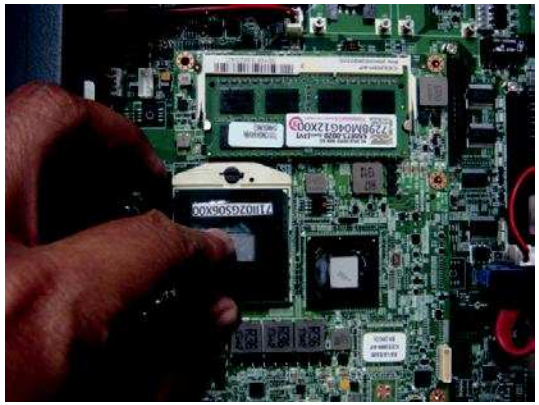




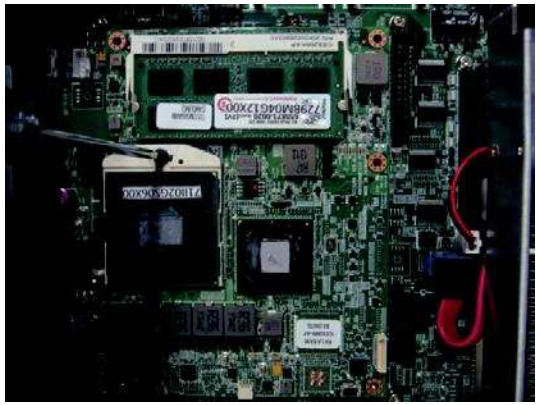
3. Insert the module into the socket at an approximately 30 degree angle. Apply firm even pressure to each end of the module until it slips into the socket. The gold-plated connector on the edge of the module will almost completely disappear inside the socket.



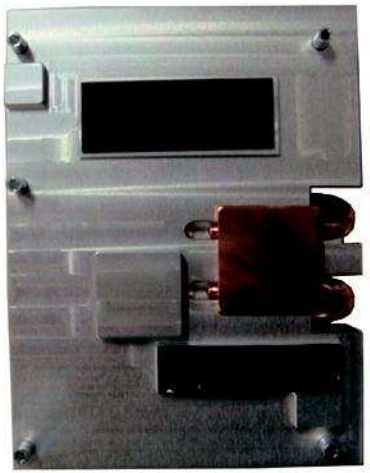
4. Insert the CPU into the FCPGA988 socket.



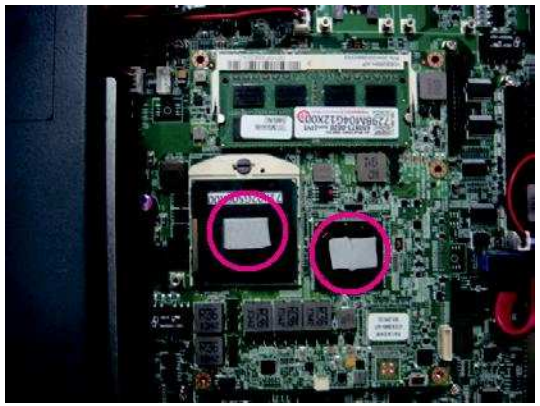
5. Turn the screw-lock counter clockwise to secure the CPU.



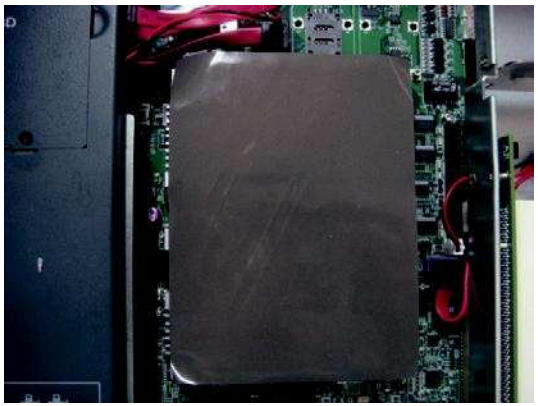
6. Place the thermal pads onto the bottom of the CPU heatsink.



7. Place the thermal pads on the CPU and PCH IC (Intel HM76 Express Chipset).



8. Secure the CPU heatsink then stick the CPU thermal pad on top.



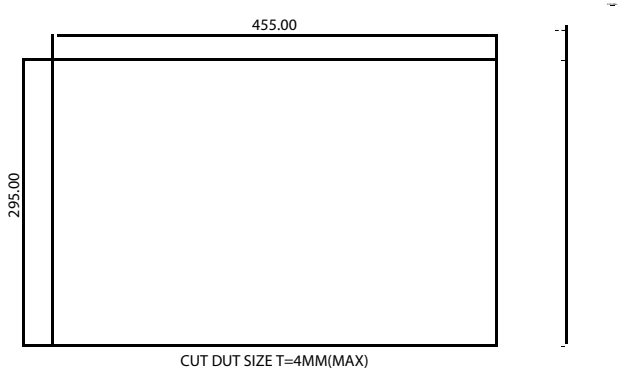
NOTE: Please make sure the glossy side of the CPU thermal pad is facing up.

Panel Mounting

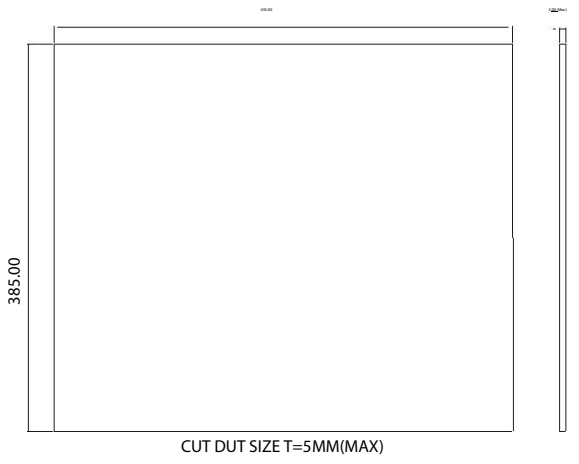
1. Select a place on the panel where you will mount the panel PC.

2. Cut out a shape on the panel that corresponds to the panel PC's rear dimensions.

   The thickness of the panel (e.g. steel board, plank, acrylic board, wall, etc.) where you will mount the Panel PC must not exceed 5mm for eTOP-IPC1960T series, 4mm for eTOP-IPC1560T series. If the distance between the front bezel and panel mount hole is too wide, it will not fit the panel mount kit.



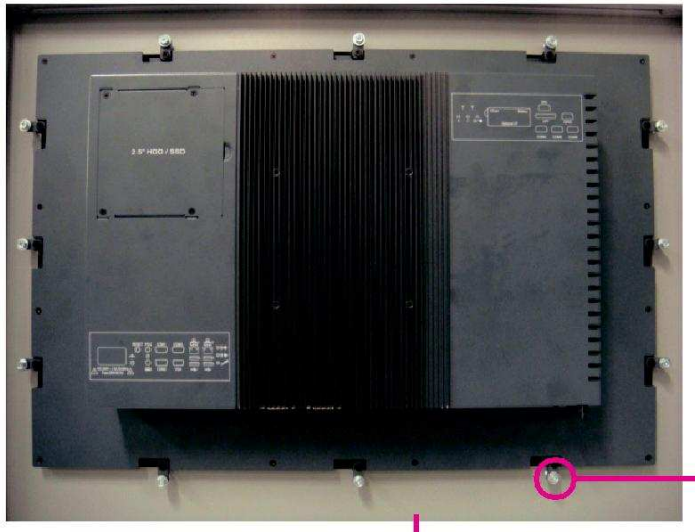
eTOP-IPC1560T Series



eTOP-IPC1960T Series

3. Slide the panel PC through the hole until it is properly fitted against the panel.

4. Position the mounting clamps along the rear edges of the Panel PC. The first and second clamps must be positioned and secured diagonally prior to mounting the rest of the clamps. Tighten the clamp's screw until it touches the panel.



CAUTION! Do not overtighten the screws to prevent damaging the Panel PC.

Chapter 4: BIOS Setup

This chapter describes how to use the BIOS setup program for the eTOP-IPC1560T/1960T series. The BIOS screens provided in this chapter are for reference only and may change if the BIOS is updated in the future.

To check for the latest updates and revisions, visit the EXOR INTERNATIONAL Web site at www.exorint.net.

About BIOS Setup

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters.

These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

- Hard drives, diskette drives, and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power management features

The settings made in the setup program affect how the computer performs. It is important, therefore, first to try to understand all the setup options, and second, to make settings appropriate for the way you use the computer.

When to Configure the BIOS

- This program should be executed under the following conditions:
- When changing the system configuration
- When a configuration error is detected by the system and you are prompted to make changes to the setup program
- When resetting the system clock
- When redefining the communication ports to prevent any conflicts
- When making changes to the Power Management configuration
- When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

- If the error occurs before the display device is initialized, a series of beeps will be transmitted.
- If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <Del> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

Press the

key to enter Setup:

Legends

Key	Function
	Moves the highlight left or right to select a menu.
	Moves the highlight up or down between sub¬menus or fields.
	Exits the BIOS Setup Utility.
	Scrolls forward through the values or options of the highlighted field.
	Scrolls backward through the values or options of the highlighted field.
	Selects a field.
	Displays General Help.
	Load previous values.
	Load optimized default values.
	Saves and exits the Setup program.
	Press <Enter> to enter the highlighted sub¬menu

Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

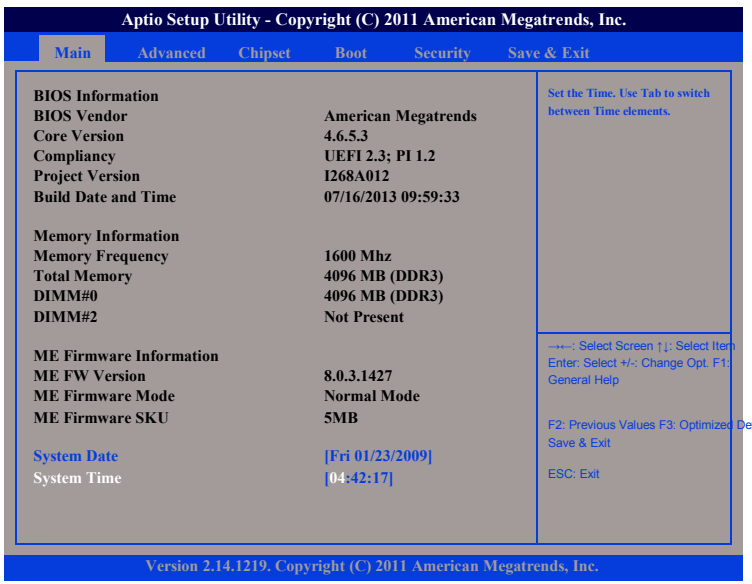
When "▶" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press .

BIOS Setup Utility

Once you enter the AMI BIOS Setup Utility, the Main Menu will appear on the screen. The main menu allows you to select from several setup functions and one exit. Use arrow keys to select among the items and press Enter to accept or enter the submenu.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.



System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Monday to Sunday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

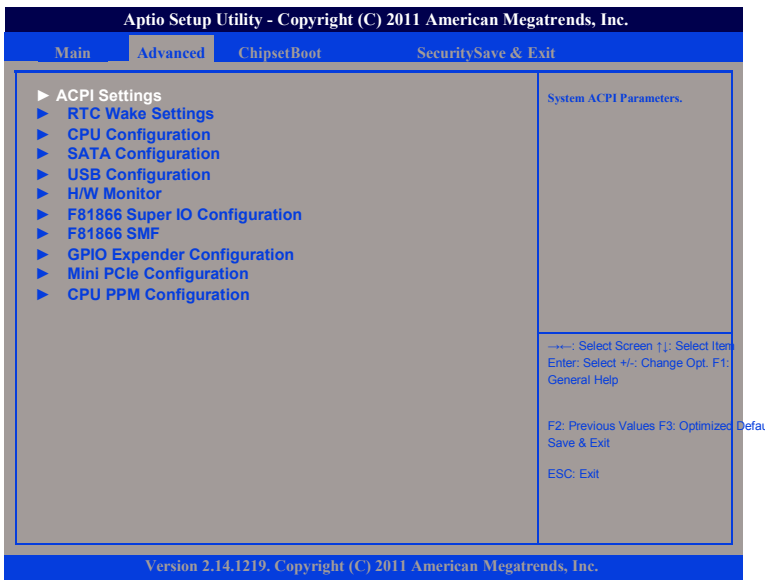
System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

Advanced

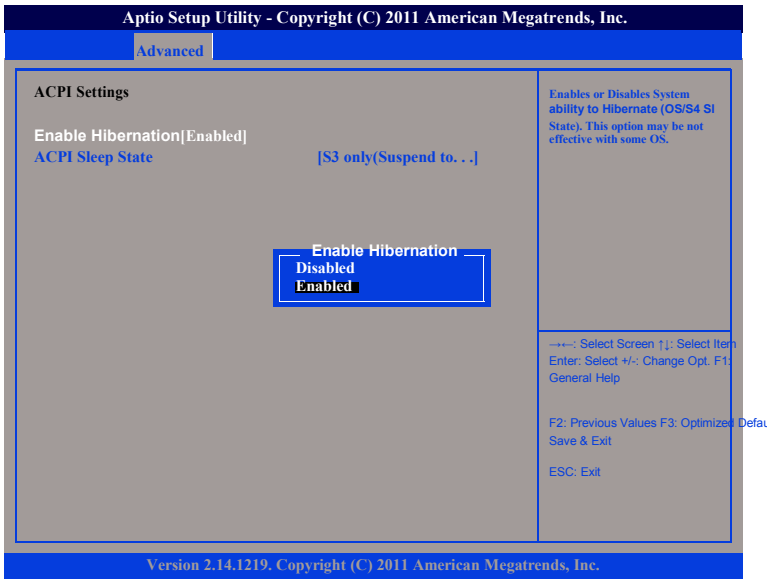
The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.

Setting incorrect field values may cause the system to malfunction.



ACPI Settings

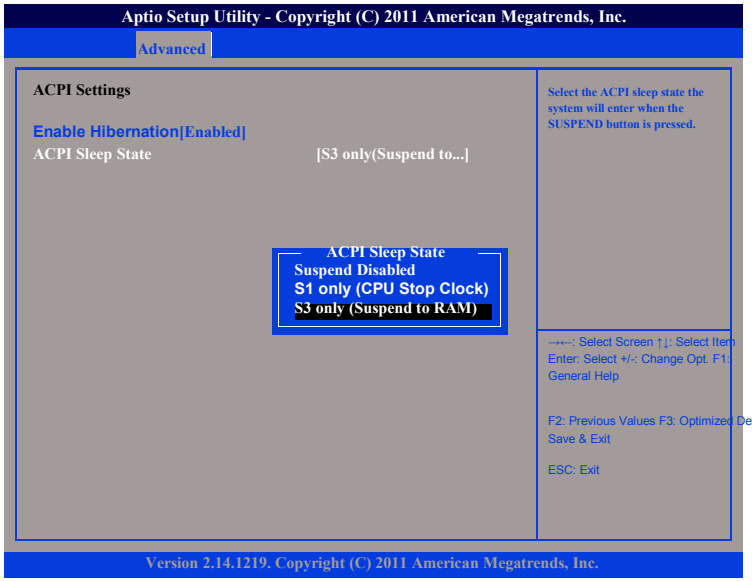
This section is used to configure ACPI Settings.



Enable Hibernation

Enables or disables system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some OS.

ACPI Sleep State



Select the highest ACPI sleep state the system will enter when the suspend button is pressed. The options are Suspend Disabled, S1 (CPU Stop Clock) and S3 (Suspend to RAM).

RTC Wake Settings

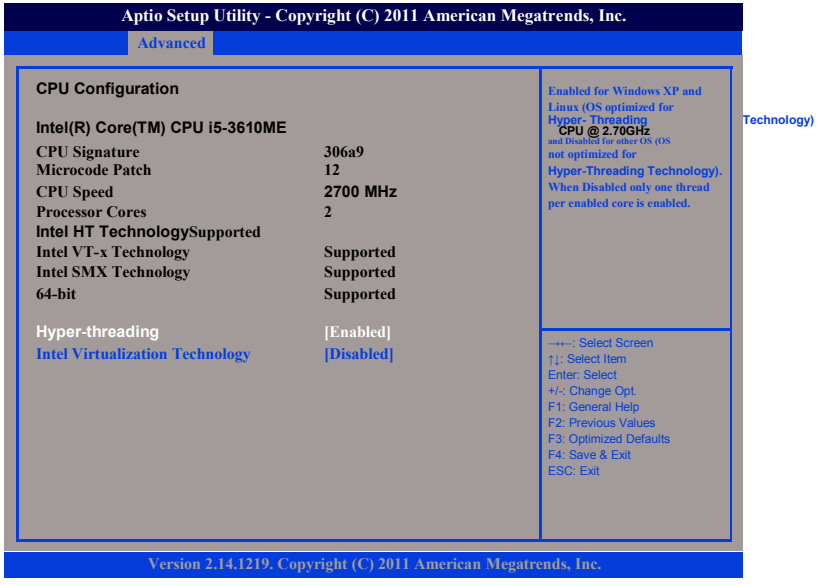
This section is used to configure S5 RTC Wake Settings.

Wake System with Fixed Time

Enables or disables system wake on alarm event. When enabled, system will wake on the hr::min::sec specified.

CPU Configuration

This section is used to configure the CPU.



Hyper Threading

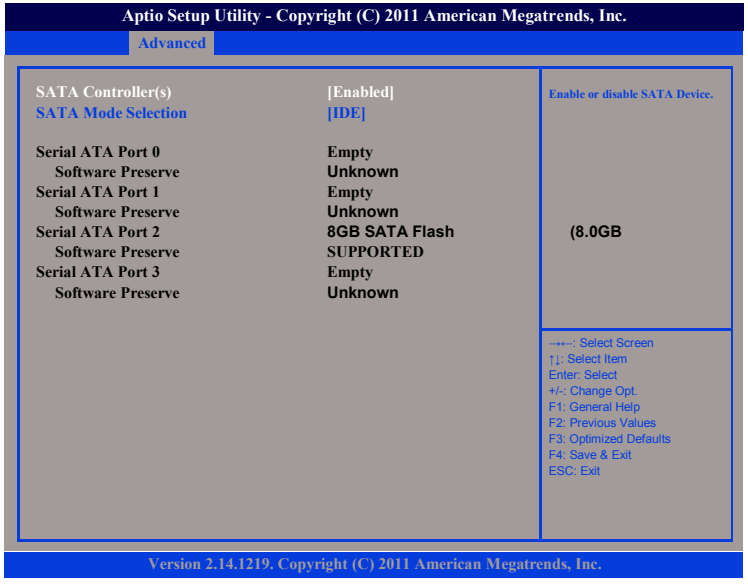
Enables or disables hyper-threading technology.

Intel® Virtualization Technology

Enables or disables Intel® Virtualization technology.

SATA Configuration

This section is used to configure the SATA drives.



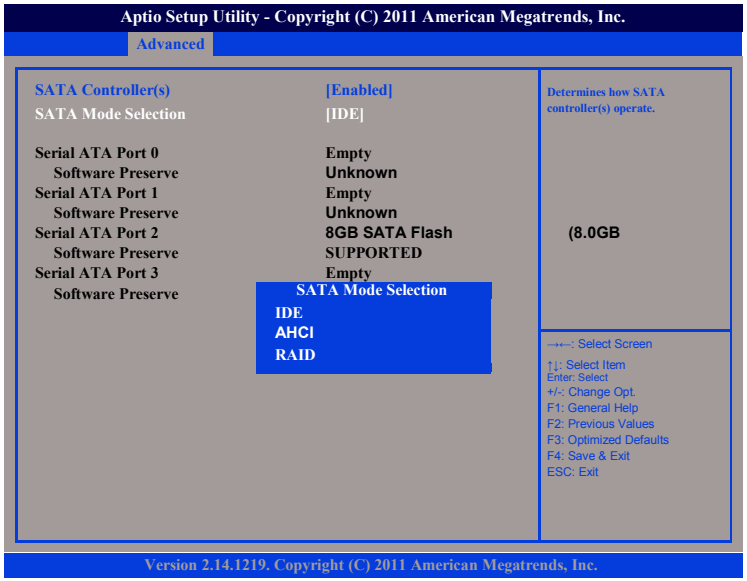
SATA Controller(s)

Enables or disables SATA device.

Serial ATA Port 0 to Serial ATA Port 3

Displays information on the SATA devices detected.

SATA Mode Selection



Configures the SATA as IDE, AHCI or RAID mode.

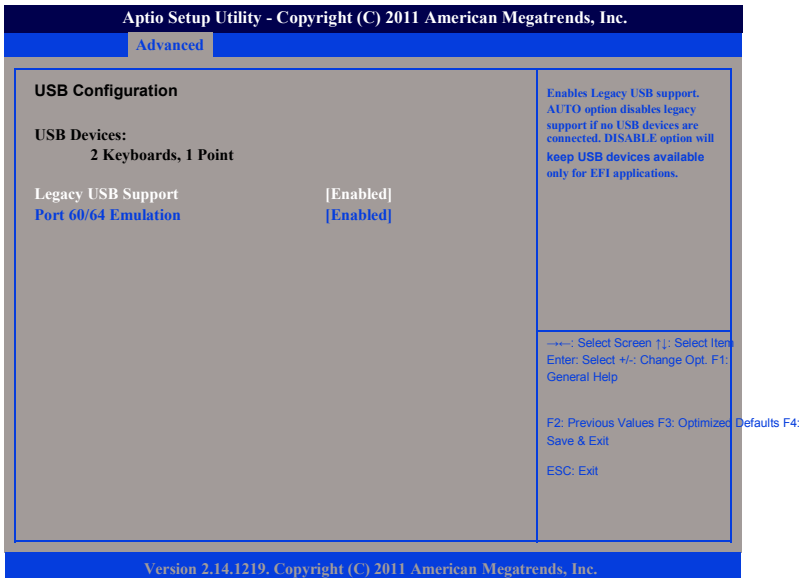
IDE This option configures the Serial ATA drives as Parallel ATA physical storage device.

RAID This option allows you to create RAID or Intel Matrix Storage configuration on Serial ATA devices.

AHCI This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance.

USB Configuration

This section is used to configure the USB.



Legacy USB Support

Enable Enables Legacy USB.

Auto Disables support for Legacy when no USB devices are connected.

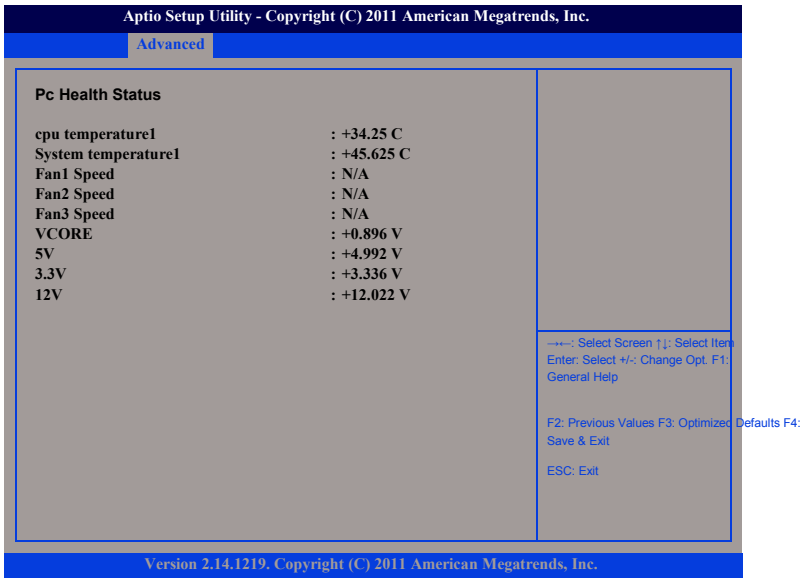
Disable Keeps USB devices available only for EFI applications.

Port 60/64 Emulation

Enables I/O port 60h/64h emulation support. This should be enabled for complete USB keyboard legacy support for non-USB aware OSes.

H/W Monitor

This section is used to monitor hardware status such as temperature, fan speed and voltages.



CPU Temperature1
Detects and displays the current CPU temperature.

System Temperature1
Detects and displays the current system temperature.

Fan1 Speed to Fan3 Speed
Detects and displays the system fan1 to fan3 speeds.

VCORE
Detects and displays the Vcore CPU voltage.

5V
Detects and displays 5V voltage.

3.3V
Detects and displays 3.3V voltage.

12V
Detects and displays 12V voltage.

F81866 Super IO Configuration

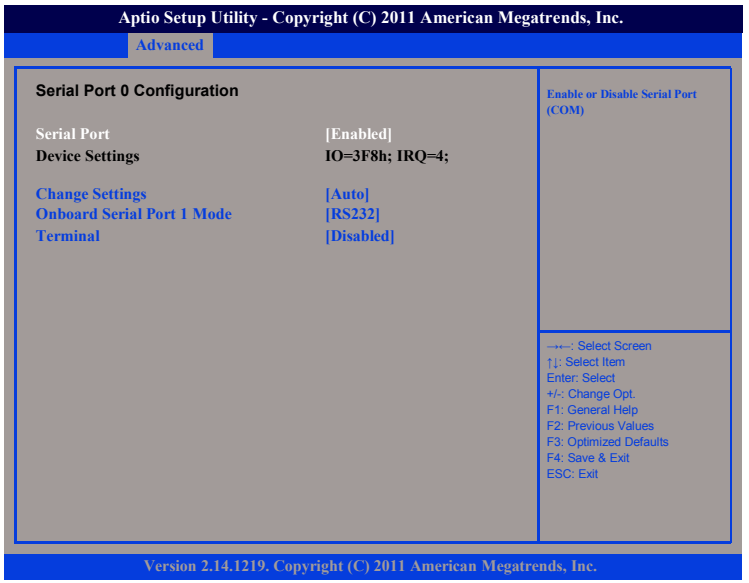
This section is used to configure the serial ports.

F81866 Super IO Chip

Displays the Super I/O chip used on the board.

Serial Port 0 Configuration

This section is used to configure serial port 0.



Serial Port

Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Onboard Serial Port 1 Mode

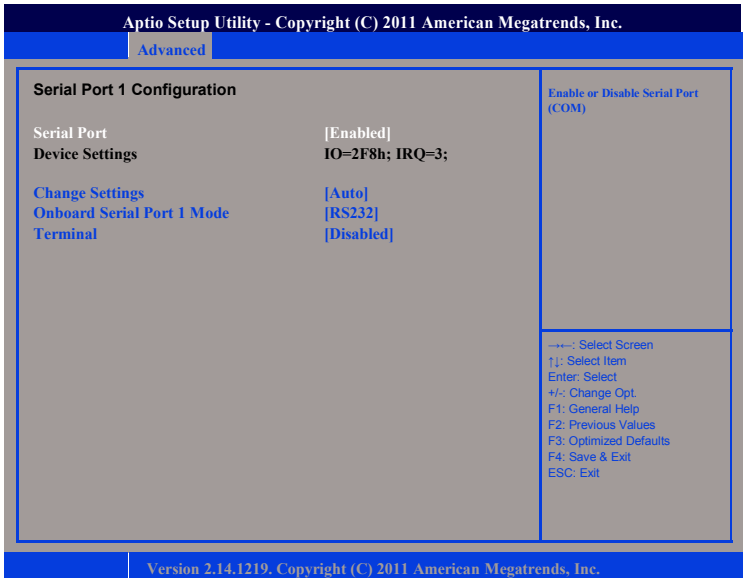
Select this to change the serial port mode to RS232, RS422, RS485 or RS485 Auto.

Terminal

Enables or disables terminal high or low.

Serial Port 1 Configuration

This section is used to configure serial port 1.



Serial Port

Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Onboard Serial Port 1 Mode

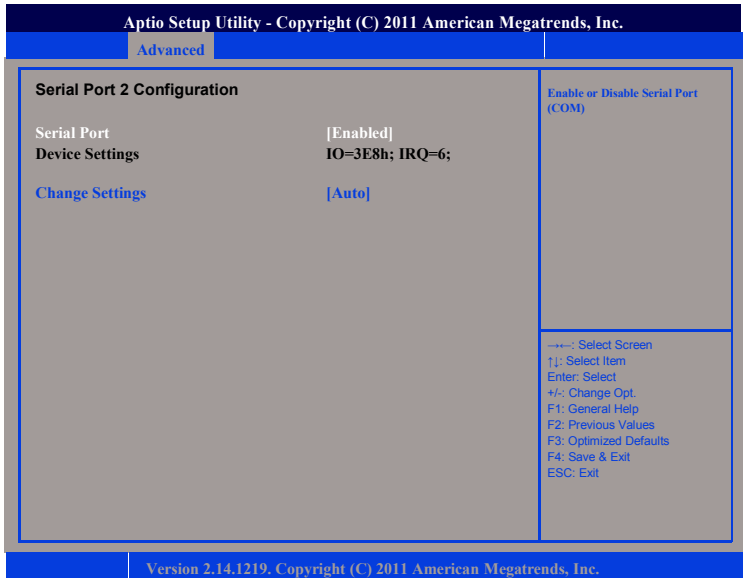
Select this to change the serial port mode to RS232, RS422, RS485 or RS485 Auto.

Terminal

Enables or disables terminal high or low.

Serial Port 2 Configuration

This section is used to configure serial port 2.



Serial Port

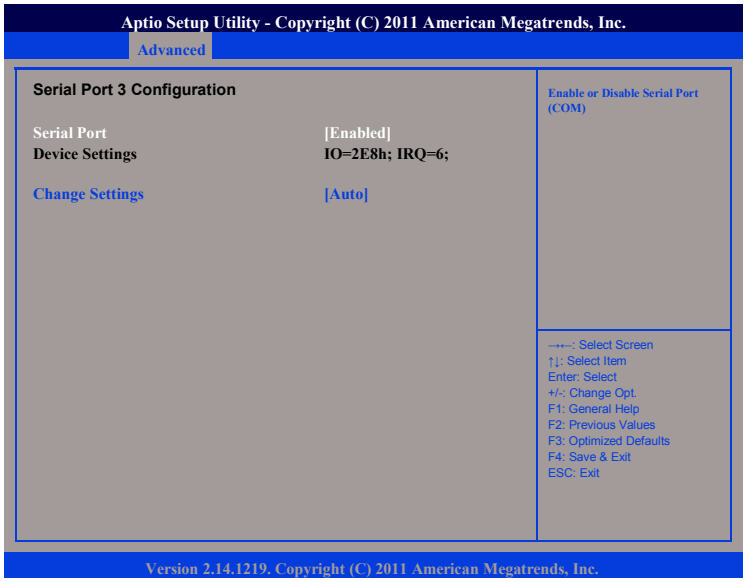
Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Serial Port 3 Configuration

This section is used to configure serial port 3.



Serial Port

Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Serial Port 4 Configuration

This section is used to configure serial port 4.

Serial Port

Enables or disables the serial port.

Change Settings

Selects an optimal setting for the Super IO device.

Serial Port 5 Configuration

This section is used to configure serial port 5.

Serial Port

Enables or disables the serial port.

Change Settings

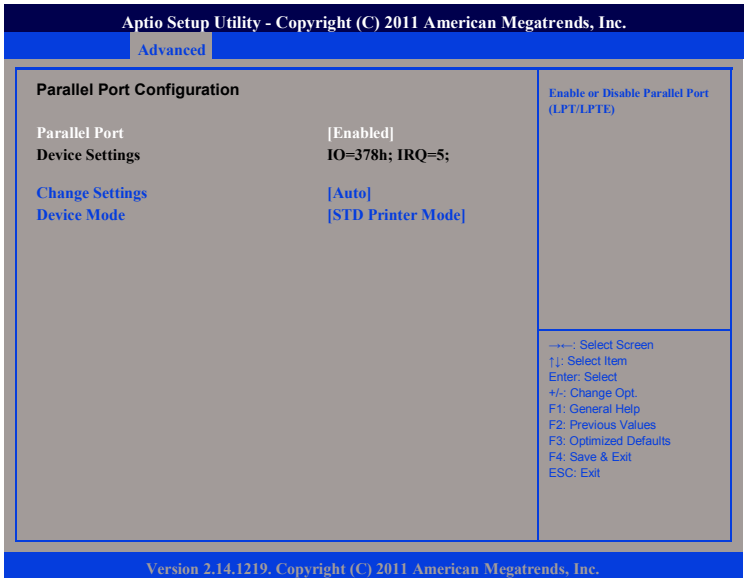
Selects an optimal setting for the Super IO device.

Device Mode

Configures the operating mode of the serial port.

Parallel Port Configuration

This section is used to configure the parallel port.



Parallel Port

Enables or disables the parallel port.

Change Settings

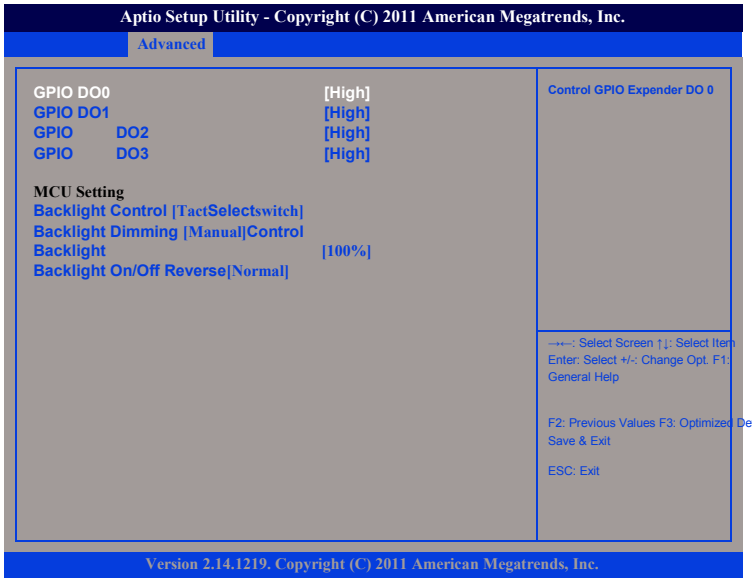
Selects an optimal setting for the Super IO device.

Device Mode

Configures the operating mode of the parallel port.

GPIO Expander Configuration

This section is used to configure the GPIO expander.



GPIO DO0 to GPIO DO3

Configures digital output 0 to digital output 3 as high or low.

Backlight Control Select

The available options are Pyroelectric Sensor and Tact Switch. The Backlight On/Off button is functional only in Tact Switch mode.

Backlight Dimming Control Select

The available options are Tact Switch, Manual and Light Sensor.

When set to Tact Switch, backlight option below will not be configurable, please use the brightness button on the panel to adjust it.

Backlight

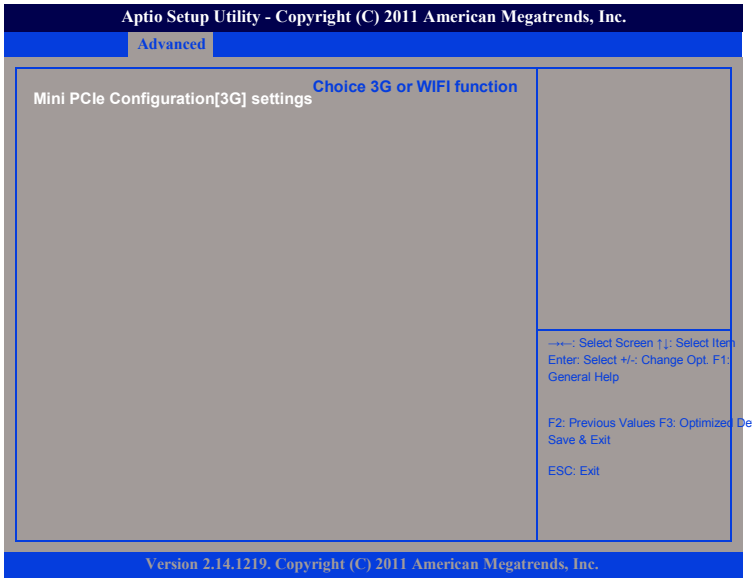
Adjusts the brightness of the backlight.

Backlight On/Off Reverse

Please configure this option only when changing the panel, otherwise the display may not work.

Mini PCIe Configuration

This section is used to configure the Mini-PCIe settings.



Mini PCIe Configuration Settings

Configures the Mini-PCIe to operate in 3G or Wi-Fi mode.

CPU PPM Configuration

This section is used to configure the Processor Power Management (PPM) configuration.

EIST

Enables or disables Intel® SpeedStep.

CPU C3 Report

Enables or disables C3 report to the operating system.

CPU C6 Report

Enables or disables C6 report to the operating system.

CPU C7 Report

Enables or disables C7 report to the operating system.

Chipset

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.

PCH-IO Configuration
PCH-IO parameters.

System Agent (SA) Configuration
System Agent (SA) parameters.

PCH-IO Configuration

This section is used to configure PCH-IO configuration.

PCH LAN Controller
Enables or disables onboard NIC.

Wake on LAN
Enables or disables integrated LAN to wake the system.

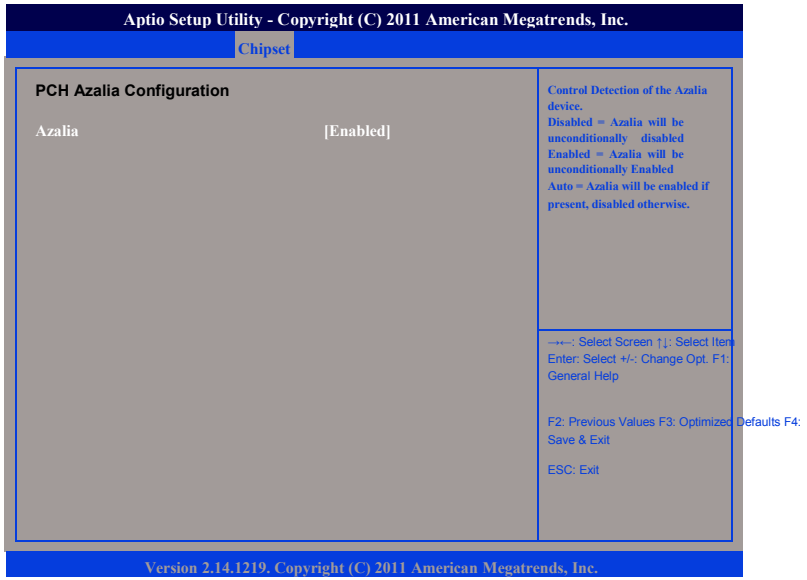
Restore AC Power Loss
Select AC power state when power is re-applied after a power failure.

RTC RAM Lock
Enables or disables bytes 38h-3Fh in the upper and lower 128-byte bank of RTC RAM lockdown.

USB Configuration

EHCI1 and EHCI2
Enables or disables the Enhanced Host Controller Interface (USB 2.0), one EHCI controller must always be enabled.

PCH Azalia Configuration



Azalia
Control detection of the Azalia device.

Disabled	Azalia will be unconditionally disabled.
Enabled	Azalia will be unconditionally disabled.

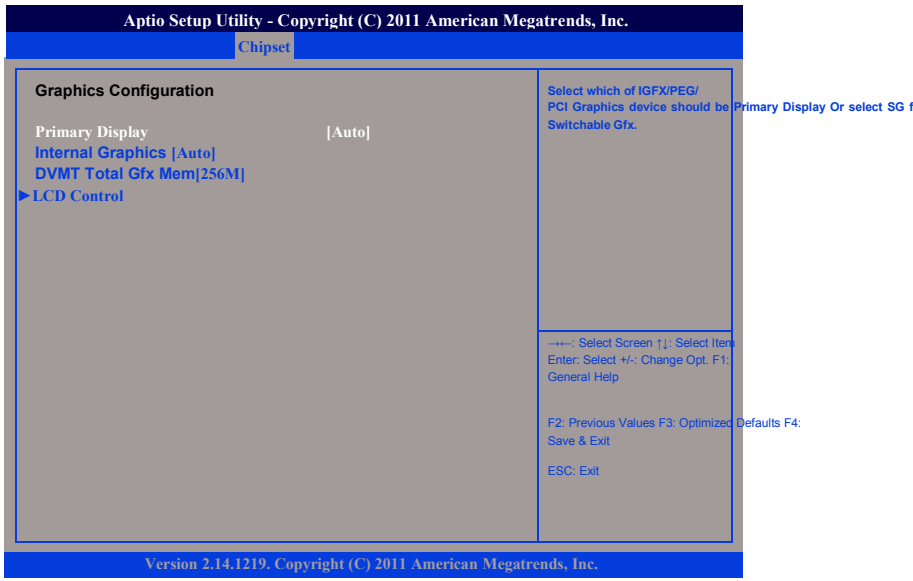
System Agent (SA) Configuration

This section is used to configure the System Agent (SA) configuration.

VT-d

Enables or disables VT-d function on MCH.

Graphics Configuration



Primary Display

Select which of IGFX/PEG/PCI graphics device should be primary display or select SG for switchable Gfx.

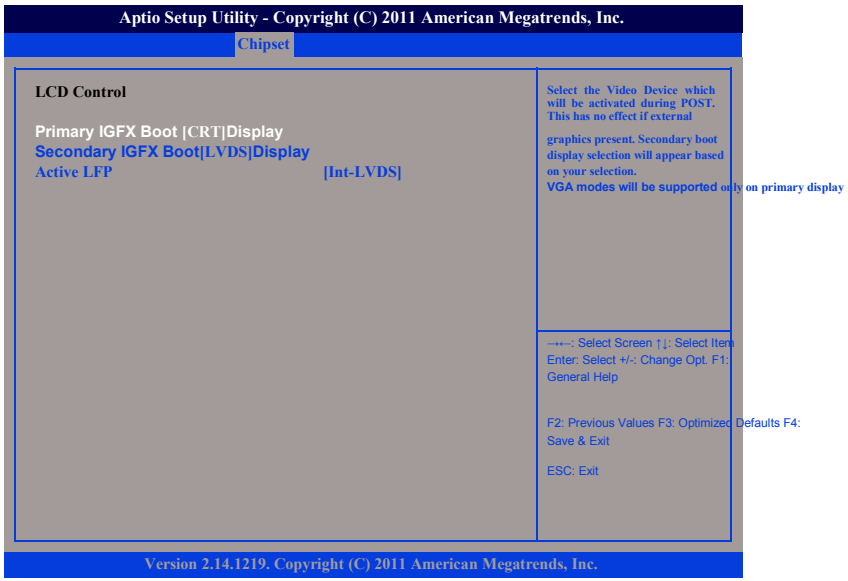
Internal Graphics

Keep IGD enabled based on the setup options.

DVMT Total Gfx Mem

Selects DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

LCD Control



Primary IGFX Boot Display

Select the video device which will be activated during POST. Has no effect if external graphics is present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.

Secondary IGFX Boot Display

Select the secondary display device.

Active LFP

Select the Active LFP configuration.

No LVDS	VBIOS does not enable LVDS.
Int-LVDS	VBIOS enables LVDS driver by Integrated encoder.

NB PCIe Configuration

This section is used to configure Northbridge PCI Express settings.

PEG0 - Gen X

Configure PEG0 B0:D1:F0 Gen1-Gen3.

PEG1 - Gen X

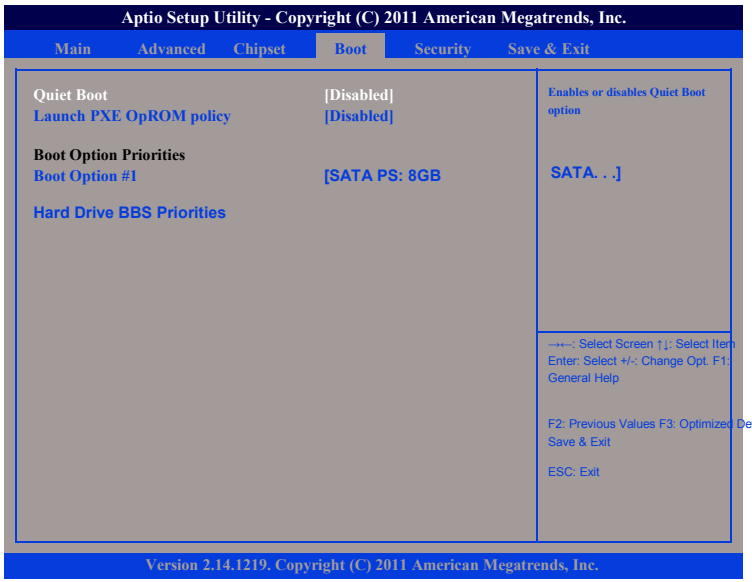
Configure PEG1 B0:D1:F1 Gen1-Gen3.

Enable PEG

Enables or disables the PEG slot.

Boot

This section is used to configure the boot features.



Quiet Boot

Enabled	Displays OEM logo instead of the POST messages.
Disabled	Displays normal POST messages.

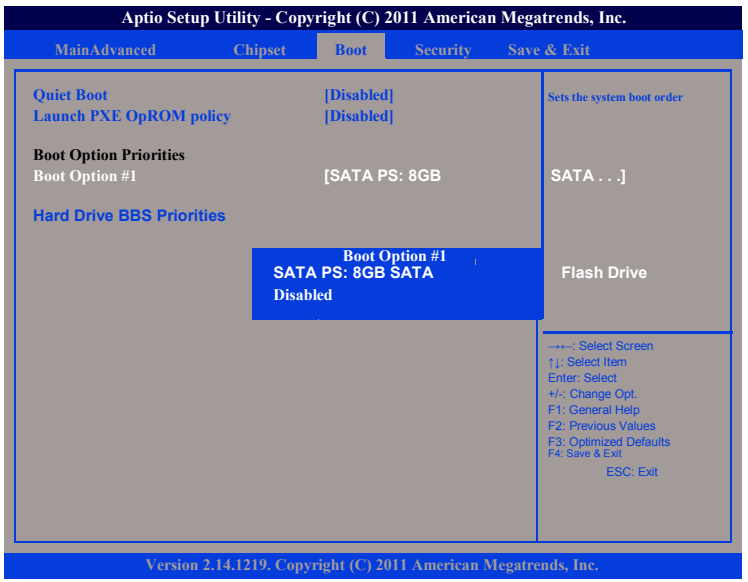
Launch PXE OpROM Policy

Controls the execution of UEFI and legacy PXE OpROM.

Boot Option Priorities

Adjust the boot sequence of the system. Boot Option #1 is the first boot device that the system will boot from, next will be #2 and so forth.

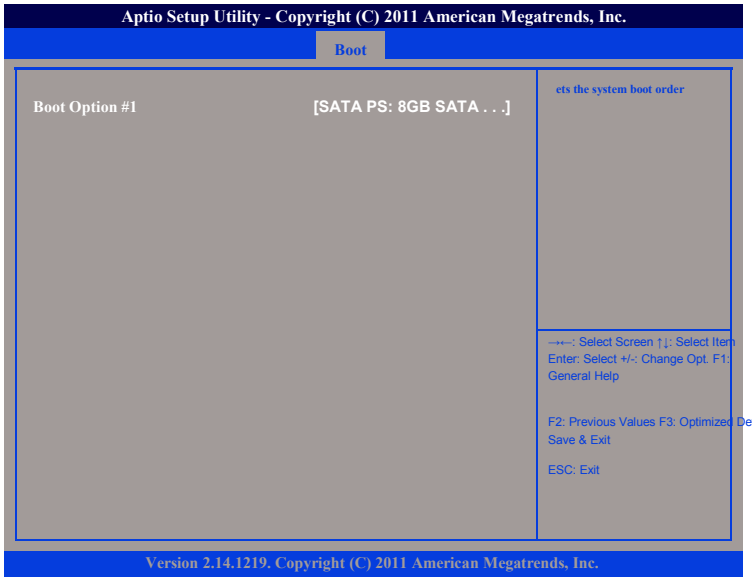
Boot Option #1



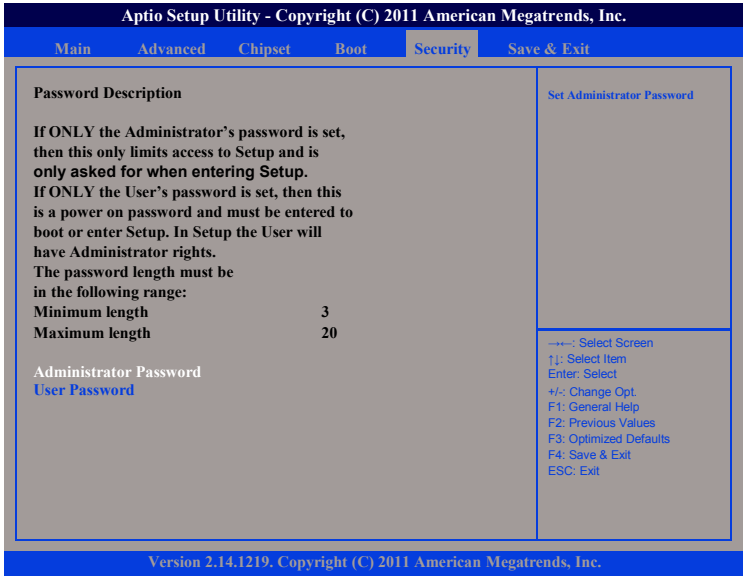
Sets the system boot order.

Hard Drive BBS Priorities

Sets the order of the legacy devices in this group.



Security



Administrator Password

Select this to reconfigure the administrator's password.

User Password

Select this to reconfigure the user's password.

Save & Exit

Save Changes and Reset

To save the changes and reset, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Discard Changes and Reset

To exit the Setup utility without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

Restore Defaults

To restore the BIOS to default settings, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

Appendix A: GPI/O Programming Guide

GPI/O (General Purpose Input/Output) pins are provided for custom system design. This appendix provides definitions and its default setting for the ten GPI/O pins in the eTOP-IPC1560T/1960T series. The pin definition is shown in the following table:

Pin	GPI/O mode	PowerOn Default	Address	Pin	GPI/O mode	PowerOn Default	Address
1	VCC	-	-	2	GND	-	-
3	GPO0	High	538h (Bit3)	4	GPI0	High	50Fh (Bit0)
5	GPO1	High	538h (Bit6)	6	GPI1	High	538h (Bit4)
7	GPO2	High	538h (Bit7)	8	GPI2	High	538h (Bit5)
9	GPO3	High	53Ah (Bit1)	10	GPI3	High	53Bh (Bit1)

The bit is Set/Clear indicated output High/Low

GPIO programming sample code

```
#define GPIO_PORT       0x538
#define GPO0            (0x01 << 3)
#define GPO1            (0x01 << 6)
#define GPO2            (0x01 << 7)

#define GPO0_HI         outportb(GPIO_PORT, 0x08)
#define GPO0_LO         outportb(GPIO_PORT, 0x00)
#define GPO1_HI         outportb(GPIO_PORT, 0x40)
#define GPO1_LO         outportb(GPIO_PORT, 0x00)
#define GPO2_HI         outportb(GPIO_PORT, 0x80)
#define GPO2_LO         outportb(GPIO_PORT, 0x00)

void main(void)
{
   GPO0_HI;
   GPO1_LO;
   GPO2_HI;
}
```

Appendix B: Watchdog Timer Setting

WatchDog Programming Guide

```
#define SUPERIO_PORT    0x2E
#define WDT_SET         0xF5
#define WDT_VALUE       0xF6
#define WDT_SET2        0xFA

void main(void)
{
  # Enter SuperIO Configuration
    outportb(SUPERIO_PORT, 0x87);
    outportb(SUPERIO_PORT, 0x87);

  # Set LDN
    outportb(SUPERIO_PORT,0x07);
    outportb(SUPERIO_PORT+1 ,0x07);

  # clear WDT status
    outportb(SUPERIO_PORT, WDT_SET
    outportb(SUPERIO_PORT+1, 0x40)
          outportb(SUPERIO_PORT,    WDT_SET2
    outportb(SUPERIO_PORT+1, 0xD1)

  # Set WDT setting
    outportb(SUPERIO_PORT, WDT_SET);
    outportb(SUPERIO_PORT+1, 0x20);          # Use the second to come down
                                             # If choose the Minute, change value to 0x28
  # Set WDT sec/min
    outportb(SUPERIO_PORT, WDT_VALUE);
    outportb(SUPERIO_PORT+1, 0x05);          #Set 5 seconds
}
```